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BLUE JAY

March 1992

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Cover: Rosehips after a freezing rain. Rhonda O'Grady.

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ANNUAL SPRING MEET

June 12, 13 and 14 are the dates set for the Saskatchewan Natural History Society's Annual Spring Meet. This year, the meet will be held at Grasslands National Park. Unlike the Annual General Meeting of the Society, at the Spring Meet more time is spent on nature study and tours than on Society business. Further details will be available in the next issue of the *Blue Jay News.*

NOTE TO SUBSCRIBERS

If you haven't renewed your Saskatchewan Natural History Society membership for 1992 yet,

YOU ARE LATE.

This will be your last issue of the *Blue Jay* before your membership expires. Renew now so you don't miss any issues.

Editor's Note: On page 194 of the December 1991 *Blue Jay*, Frank Switzer was erroneously listed as co-author of the article entitled "Nesting Swallows on the Go."

THE EXTINCTION AND SURVIVAL OF BIRDS — 65 MILLION YEARS AGO

TIM T. TOKARYK, Saskatchewan Museum of Natural History, 2340 Albert Street, Regina, Saskatchewan. S4P 3V7

Extinction and evolution are not separable. For a species to evolve and survive it must be able to occupy a niche in the ecological system that is available (most likely due to an altered environment). Otherwise the species will become a mere glitch in the evolutionary record. Thus, extinction is an important partner of evolution. Historically, however, since Darwin's masterpiece *On the Origin of Species*, more emphasis has been placed on "evolution" than on "extinction" (at least until the past few decades). Two recent phenomena have evened the scales of discussion: one, that humans have the ability to exterminate species from the face of the earth; and two, a paper published in *Science* in 1980 announcing, with physical evidence for the first time ever, a specific cause of the extinction of the dinosaurs and other organisms 65 million years ago, at the end of the Cretaceous Period.[1]

If there seems to be little connection between extinction and evolution, let me explain. Evolution has traditionally been viewed as a slow, gradual process (again, until relatively recently). What Luis Alvarez and his team did in 1980 was to state that nearly 70% of all species became extinct suddenly at the end of the Cretaceous Period in a time frame of several months to a few years, as a result of an extraterrestrial impact. This disturbed gradualists (neo-Darwinians) on two points. Firstly, Alvarez envisioned an extremely abrupt extinction. A few months is a short period of time by anyone's standards, especially geologists who generally have a much longer running timepiece. Secondly, the theory introduces an external force that shapes evolution. If it were not for the impact of an extraterrestrial body, we would not be here, at least in our present form. The Alvarez team has reintroduced the term "extinction" into our evolutionary vocabulary and has added a descriptor — mass extinction.

This brings me to the main focus of this article — birds. For the most part dinosaurs have been the centre of attention in discussions of Cretaceous extinction. Two groups I have noticed little information about are insects and birds. Fortunately, a month or so ago I came across an article by Jarzenbowski of the Booth Museum of Natural History, England, where extinction of insects was the main focus of discussion.[9] Yet, there has been little discussion of what happened to the birds. Storrs Olson has stated that the Late Cretaceous avian fauna resembles the mammalian record and supports a catastrophic mass extinction.[17] By looking at the fossil record in more detail we see that this statement is too general.

Table 1 illustrates the North American avian record of the last 30 million years of the Cretaceous Period. Most noticeable is that most of the avian fauna is found near the end of the Cretaceous between 65 and 74 million years ago. This fauna is composed almost exclusively of shorebirds within the order Charadriiformes. Yet none of the Cretaceous birds can be assigned to modern families.[17]

Let us look a little further into the past. During most of the late Cretaceous (between 110 and 65 million years ago) North America was split up the middle by a large interior seaway. The western shoreline was what is now Alberta, parts of Saskatchewan, Wyoming, Montana and other states farther south. Because coastal environments are ideal for fossil preservation we have a good record of the shoreline's inhabitants. In addition, marine sediments reveal a diverse fauna which included fish, sharks, turtles, lizard-like swimming reptiles called mosasaurs, and nessie-like reptiles called plesiosaurs, as well as birds, the latter grouped into the orders Hesperornithiiformes and Icthyornithiiformes.

The hesperornithiiform birds are unlike any modern representatives in one obvious way — they had teeth. North American genera included *Hesperornis*, *Baptornis*, and *Parahesperornis*, and all could not fly as evidenced by the unkeeled sternum and extremely small wings. They were piscivorous (fish eaters) and were specialized for foot-propelled diving. Feather impressions of some species indicate that they possessed plumulaceous (down-like) feathers.

The ichthyornithiiform birds consist of only one genus, *Ichthyornis*. Unlike the hesperornithiiforms, *Ichthyornis* could fly but also had teeth. Besides the obvious predatory nature of this group, little else is known.

These toothed birds are found mostly in marine sediments of North America between the Turonian and Campanian Stages (between 91 and 74 million years ago). During this same time the sea transgressed and regressed, finally beginning to regress for good in the Campanian. When this sea finally withdrew so did the toothed birds. They became extinct. It is reasonable to assume that as the interior seaway withdrew, the niches that these birds occupied were lost. The toothed birds therefore experienced a slow, gradual extinction millions of years before the end of the Cretaceous.

Returning to the shorebird fauna of North America, we see that its representatives appear only near the end of the Cretaceous. Approximately 22 species are known. Presumably they derived from species not yet discovered. After the extinction event at the end of the Cretaceous, none of the species, genera or families are found. It must be assumed that something survived of the charadriiform birds to spawn the modern representatives of this order. Unfortunately the avian record immediately afterwards is poor until the late Paleocene of France, some 6-8 million years after the terminal Cretaceous extinctions.[12]

The avian record we now possess therefore shows two extinction events, one gradual (the extinction of the toothed birds) and one sudden (the extinction of most charadriiform species). The apparent sudden event that wiped out the dinosaurs

Table 1: North American Bird Species of the Late Cretaceous

Abbreviations: Ce, Cenomanian, 97-91 million years ago (mya); Tu, Turonian, 91-88 mya; Co, Coniacian, 88-87 mya; Sa, Santonian, 87-84 mya; Ca, Campanian, 84-74 mya; Ma, Maastrichtian, 74-65 mya.

Species	Geological Stages						Source
	Ce	Tu	Co	Sa	Ca	Ma	
Graculavus velox						X	18
G. velox?						X	18
Telmatornis priscus						X	18
Anatalavis rex						X	18
Laornis edvardsianus						X	18
Palaeotringa littoralis						X	18
P. littoralis?						X	18
P. vagans						X	18
Graculavid, gen. et sp. indet.						X	18
Tytthostonyx glauroniticus						X	18
Fam. et gen. indet.						X	18
Aves, incertae sedis						X	18
Alexornis antecedens					X		5
Lonchodytes estesi						X	3
L. pterygius						X	3
Torotix clemensi						X	3
Cimolopteryx rara						X	3
C. minima						X	3
C. maxima						X	3
Ceramornis major						X	3
H. regalis			X	X	X		2, 6, 7, 11, 19
H. gracilis			X	X	X		6, 11
H. altus			X	X	X		6, 11, 13
Parahesperornis alexi					X		13
Baptornis advenus					X		15
Ichthyornis sp.		X	X	X	X		9, 10, 14, 21
Ichthyornis dispar			X	X	X		11
I. anceps			X	X	X		11
I. antecessor					X		24
Apatornis celer			X	X	X		11
Palintropus retursus						X	3, 4
Enaliornis-like	X						12
Hesperornis crassipes			X	X	X		6, 11

and affected other reptiles and mammals at the end of the Cretaceous appears also to be a causative agent in the second bird extinction. But unlike other groups of vertebrates whose post-Cretaceous relatives are known, the avian record is blank for several million years after the extinction event so we do not know how severe the extinction was among the birds. We may find, with future discoveries, that right above the boundary that marks the end of the Cretaceous and the beginning of the Paleocene there was an avian fauna that resembles the Cretaceous fauna thus suggesting the birds were affected little by whatever extraterrestrial agent that caused the extinction of the dinosaurs. Or we could find a completely different fauna representing more modern lineages which would suggest some sort of rapid faunal turnover supporting a catastrophic extinction event.

In the end we are left with another partially answered question. What really happened to the birds at the end of the Cretaceous? What were the predecessors of the shorebirds? At present, we just do not know for sure. This is confirmed by a recent report by Unwin.[20] We can only work with what is at hand in the fossil record. The avian story is only beginning to unfold.

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50th ANNUAL SASKATCHEWAN CHRISTMAS BIRD COUNT — 1991

Compiled by WAYNE C. HARRIS, Box 414, Raymore, Saskatchewan. S0A 3J0

In this the fiftieth year of the Christmas Bird Counts being published in the *Blue Jay* (it is also anniversary number 50 for both the *Blue Jay* and the Saskatchewan Natural History Society) it seems appropriate that this is the best year ever for the counts. It has been a long time since five new species were added to the list in one year and never before have there been so many people on so many counts. This was all enhanced by the nicest weather we have had for a long time for the entire count period (14 December - 2 January). The only drawback that became very obvious through the compilation effort was that although nice weather enhances the quantity of data, it would be, from a compiler's perspective, much easier to complete the compilation if the weather had been -50° and the winds blowing continuously. At least I think that compiling counts when none were done would be easier than the 99 that were received this year!

Weather and Coverage

Table 1 summarizes the absolutely beautiful weather conditions we endured to carry out the 1991 count. Many days were above freezing, the winds were generally light and the skies clear. There was virtually no snow fall during the count period and no blizzards to be endured. One has to really search to find a minimum temperature below -18°C (0°F).

With the warm weather more people (667) participated in more counts (99) than in any of the past years (Count areas and Participants follows). Formerly the most people to participate was 611 in 1987 while the maximum number of counts was 84 in 1988. Over 1200 hours were spent watching birds this Christmas!

The bird counts

There were 96 species and 2 forms reported from the 99 counts this year and all but 4 of the species were recorded on count day. A total of about 74,000 birds were seen, about three quarters the number reported last year. Some of the largest decreases in numbers were for Mallard down about 14,000, Snow Buntings - 7000, Horned Lark -5700 and Lapland Longspur -4200. These reductions do not necessarily reflect actual population declines but rather are more likely a result of shifting wintering areas. The precount weather which was in late fall much colder and with heavier snowfalls forced many of these birds to move to more hospitable conditions and once further south they are not likely to return until spring. This is particularly true of the Horned Lark, longspur and Mallard. With the drop in Snow Bunting numbers the House Sparrow became the most abundant species (18,957 individuals) and followed only the Black-billed Magpie (91 of 99 counts), Black-capped Chickadee (91 counts), and Common Raven (90 counts) as the most frequently recorded species, with records from 88 locations.

Saskatoon again led with greatest variety of species with 42 followed closely by Squaw Rapids with 41, Fort Walsh and Fort Qu'appelle with 39 species and Weyburn with 38. Other counts with over 30 species include Raymore with 35, Glentworth with 32, and Regina, Indian Head and Hudson Bay, all with 31.

New Species

Five species were seen for the first time on a Saskatchewan Christmas bird count raising the overall total to 158 species. The first of these new species was a Yellow-billed Loon at Gardiner Dam. This bird had been present for some time and has been seen by a considerable number of people. The Yellow-billed Loon normally winters in coastal areas and inland records anywhere are rare.

The second new species was a Red-headed Woodpecker at White Bear Lake in the Moose Mountain area. Although this species is quite rare even in the summer in Saskatchewan there are several Manitoba winter records. A Black-headed Grosbeak was found on the Moose Jaw count. This species normally would be in the tropics during the winter months. A Savannah Sparrow visiting a feeder in Saskatoon was the fourth new species for the count. The last new species was the Chestnut-collared Longspur photographed on the Govenlock count. Although this is a first record of this species for a Saskatchewan CBC and I think for Canada it is probably the least surprising considering the abundance of this species in this area during the summer.

Rare species

For the second year in a row a Harlequin Duck was reported, this time from Fort Qu'appelle. The Turkey Vultures at Grayson and the Fox Sparrow at Saskatoon were the third records. The White-crowned Sparrow at Weyburn was only the fourth record. The Squaw Rapids' Common Loon was the sixth record.

Population trends

Some of the more outstanding declines were mentioned earlier but several other species declined to a similar degree even though the numbers were not as spectacular. Short-eared Owls were reported from only 7 counts and only Glentworth had more than one. The fact that owls in general were less common in the farmland regions may reflect low prey populations. This may also apply to the low numbers of Rough-legged Hawks. Both Brown Creeper and Golden-crowned Kinglets were undoubtedly reduced by the early cold weather.

On the positive side was the increase in numbers of the members of the blackbird family. The early heavy snowfall may have forced these species to seek food in livestock feedlots and with the food source available to them many decided to stay instead of continuing their migration southward. The most notable of these was the Western Meadowlark which, prior to this year, had been found only 20 times on counts and this year there were 11 records.

One other influx deserves mention. Northern Hawk Owls were surprisingly common along the forest fringe. Previously there had been 40 counts with only 33 individuals on count day. This year there were 18 counts with 32 count day individuals, doubling the previous 49 years' total in just one year! Great Gray Owls also had large increases over past years.

Count Areas and Participants

(Names of compilers are in italics, number of observers in parentheses at end of list of names.)

1. ABERNETHY-KATEPWA. Bryan Bittner, *Ron Bittner*, Phyliss Bordass, Del Cairns, Ron Hooper, Bob Kreba, Marj Leader, Steve Lucyk, Joy McKen, Norman McKen, Wendy Paquin, Lorne Rowell, Keith Stephens, Wanda Stueck. (14)
2. ARMIT. Les Baker, Anne Harris, Wayne Harris, *Donald Hooper*, William Zak. (5)
3. BANGOR. *Jean Hilton*, Minnie Hughes, Bill and Sheila Popowich. (4)
4. BATTLEFORD. *Jean Anderson*, Mary-Jean and Ron Dewald, Barry Craig. (4)
5. BETHUNE. *Doug and Vera Laing.* (2)
6. BIGGAR. Roger Assailly, *Guy Wapple*, Robert Wapple, Sandra Wapple. (4)
7. BIG MUDDY LAKE. Martin Bailey, *Carol Bjorklund.* (2)

8. BIG RIVER. *Glenn Honig*. (1)

9. BIRCH HILLS. *Moe Mareschal*, Marg Mareschal, Don Weidl. (3)

10. BORDEN. *Wayne Harris*. (1)

11. BRIGHTWATER RESERVOIR. *A.R. Smith*. (1)

12. BROADVIEW. *Dave Chaskavich*, Don Weidl. (2)

13. BROMHEAD. Martin Bailey, *Carol Bjorklund*. (2)

14. CANDLE LAKE. *Burke Korol*, Harv Lane. (2)

15. CHOICELAND-GRONLID. *Wayne Harris*. (1)

16. CLARK'S CROSSING. Carol Blenkin, Sandra Flood, Al Hartley, Erling Larsen, Grethe Larsen, Kevin Moore, Menno Nickel, Ben Rosser, Hilda Voth, *Michael Williams*. (10)

17. CONQUEST-OUTLOOK. Jill Forrester, *A.R. Smith*. (2)

18. CRAVEN. Martin Bailey, Margaret Belcher, Al Binnie, Betty Binnie, *Carol Bjorklund*, Phyllis Ilsley, Ferne Lawrence, Milow Worel. (8)

19. CROOKED LAKE (A). Doug Boivin, *Don Weidl*, Tony Weidl. (3)

20. CROOKED LAKE (B). Hazel and Vern Bjorgen, Bill and Mayta Livesay, *Dorothy Skene*, Ed Skene. (6)

21. CROOKED RIVER. Anne Harris, Valeri Harris, *Wayne Harris*. (3)

22. DALMENY. *Loyd Sperling*. (1)

23. DILKE. *Margaret Belcher*, Myrla Holland, Ken McArton, George Metz. (4)

24. DUVAL. George Herber, Mervin Hey, Iain Richardson, *Lloyd Saul*. (4)

25. EDAM. Marg Terpstra, *Tom Terpstra*. (2)

26. ENDEAVOUR. *Norman Harris*. (1)

27. FENTON. *Carman Dodge*. (1)

28. FORT QU'APPELLE. John Banick, Ethel Cockwill, Ann Davies, Frank Davies, Evelyn Fleming, Doreen Harman, *Ronald Hooper*, Naomi Jardine, Cal Keller, Bob Kreba, Lois Lamontagne, Maurice Lindgren, Don McDougall, Allan Mlazgar, Paul Paquin, Lorne Rowell, Lloyd Talbot. (17)

29. FORT WALSH. Martin Bailey, Carol Bjorklund, Dixie Black, Anemone Harris, Wayne Harris, Burke Korol, Wilkes Parsonage, *Guy Wapple*, Robert Wapple. (9)

30. GARDINER DAM. Martin Bailey, Carol Bjorklund, Anemone Harris, Valeri Harris, Wayne Harris, Burke Korol, *Guy Wapple*, Robert Wapple. (8)

31. GLENTWORTH. *Wayne Harris*. (1)

32. GOOD SPIRIT LAKE. *Bill Anaka*, Joyce Anaka, Julia Wiwchar. (3)

33. GOVENLOCK. Martin Bailey, Carol Bjorklund, Anne Harris, Valeri Harris, *Wayne Harris*, Burke Korol, Guy Wapple, Robert Wapple. (8)

34. GRASSLANDS NATIONAL PARK. Anne Harris, Valeri Harris, *Wayne Harris*, Jacques Saquet. (4)

35. GRAYSON. *Charles Helm*, Karl Zimmer. (2)

36. GRENFELL. *Jim Elliot*. (1)

37. HEPBURN. *Phyllis Siemens*. (1)

38. HUDSON BAY. Moe Alain, Les Baker, Pat Beaulieu, Gerald Coates, Anne Harris, Wayne Harris, Les Hayes, *Donald Hooper*, Fumi Torigai, Taeko Torigai, Tsetse Torigai, Gloria Stang. (12)

39. HUMBOLDT. *Ed Brockmeyer*, Warren Hoffman, Mike Volk. (3)

40. INDIAN HEAD. Carol Beaulieu, Denise Beaulieu, Vic Beaulieu, Doug Derksen, Irv Escott, Dave Gehl, Roger Grey, Mavis Grey, Gordon Howe, *John Kort*, Linda Kort, Mary Kort, Peter Kort, Don Longeau, Fran Maddia, Erin Neill, Doug Nerby, Helen Nerby, Dora Nichols, Norine Nichols, Lou Osiowy, Lorne Scott, Chris Skinner, Fred Skinner, Linda Skinner, Charlie Thompson, Ruby Thompson, Anne Willerth, Gordon Willerth, Jackie Willoughby. (30)

41. KAMSACK. John Barisoff, George and Mary Bernhard, Agnes Betz, Sally Bishop, Mable Buceuk, Lindee Dewores, Doris Franklin, Bill Koreliuk, W.J.C. May, Ann McIvor, Dallas and Jesse Rezansoff, *Isabel Ritchie*, Wally Sasyniuk, John Solomon, Elenor Sookocheff, Ted and Thoreen Wallace, Ann and Gordon Wlasichuk. (22)

42. KELVINGTON. Pat Finnie, Chet Sloan, *Diane Sloan*, Marguerite Sloan. (4)

43. KENASTON. Doug Beckie, *Lawrence Beckie*, Lori Cooper. (3)

44. KILWINNING. *E.A. Driver*, M.E. Driver. (2)

45. KINDERSLEY. *Gerry and Michael Essar.* (2)

46. KINLOCH. *Don Forbes*, Doreen Forbes, Alice Rodenberg, Wilf Rodenberg. (4)

47. KUTAWAGAN LAKE. *Wayne Harris*, Sheila Lamont. (2)

48. LA RONGE. Cheryl Paul, *Jim Paul*, Lorie Ann Paul. (3)

49. LAST MOUNTAIN LAKE WILDLIFE MANAGEMENT UNIT. Anne Harris, Valeri Harris, *Wayne Harris*, Sheila Lamont. (4)

50. LEADER. *Daisy D. Meyers.* (1)

51. LIVELONG. *Sarah Pavka.* (1)

52. LOVE-TORCH RIVER. Dot and Ed Bennett, *Bert Dalziel*, Duke Dalziel, Joan Dalziel, Kari Dalziel, Sara Dalziel, Betty Donovan, Bruce Donovan, Mildred Long, Bill Matthews, Lynn Matthews, Irene Vivian. (13)

53. LUSELAND. Estelle Finley, *Kim Finley*, Bill Frey, Bill Holton, Donna Holton, Travis Holton, Virginia Holton, Bev Honeker, Brent Honeker, Dustin Honeker, Levi Honeker, Alexis Martfeld, Katrina Martfeld, Travis Martfeld, Wyatt Martfeld, Joe Rozlein. (16)

54. MACDOWALL. *Myron Barton*, Marie Best, Lon Borgerson, Val Drummond, Bill Gibbs, Norman Kernohan, Gladys Kernohan, Henry Neudorf, Sylvia Neudorf, Eileen Wilker, Harry Wilker. (11)

55. MATADOR. Cindy Romo, *J.T. Romo.* (2)

56. MEADOW LAKE. Pat Dunk, Deb Eisenbut, Betty Ann Golly, Byron Golly, Stuart Golly, Tyler Golly, *Bob Wilson*, George Wood, Gladys Wood. (9)

57. MELFORT. *Frieda Markland.* (1)

58. MELVILLE. *Marion MacLean*, Bernie and Marilyn Sheppard, Mildred Wotherspoon, Ross Wotherspoon. (5)

59. MOOSE JAW. Mac Aldred, Andy and Vi Anderson, Edith Bell, Doug and Helen Brunsdon, Carol Clelland, Muriel Dormer, Doug and Pat Francis, Ed and Tristan Fredeen, George Grigg, Al Gurnsey Kerry Hanley, Eve King, Cy Knight, *Leith Knight*, Connie and Hugh McIntyre, Nancy and Vivien Meikle, Pierre Morrisette, Gavina Reekie, Gus Sagal, Ed and Grace Walker. (27)

60. NAICAM. Eldor Jensen, Julie Jensen, *Ron Jensen.* (3)

61. NEELY LAKE. Dawn Billeter, Edwin Billeter, Shirley Billeter, *Donald Hooper*, Gordon Johnson, Pauline Lindenbach, Betty Salmond. (7)

62. NIPAWIN. Vi Budd, *Joyce Christiansen*, Doug Pegg, Helen Pegg, Doug Phillips, Shirley Phillips. (6)

63. PIKE LAKE. Mrs. Marcel Bernier, Carol Blenkin, Kent Brace, Muriel Carlson, Melanie Elliott, Mary Gilliland, *Bernie Gollop*, Mike Gollop, Debbie Lashta, Frank McDougall, Kevin Moore, Doug and Marguerite Schneider, Aire Van Duyvendyk, Michael Williams, Jim Wood, Lois Wooding. (17)

64. PORCUPINE PLAIN. Les Baker, David Black, Frank Gabriel, *Donald Hooper*, Keith Larwood, Pat Larwood, Paula Remple. (7)

65. PREECEVILLE. *Jim and Mary Grimsrud.* (2)

66. PRINCE ALBERT (A). *Elsie Morton.* (1)

67. PRINCE ALBERT (B). Carol Beck, Ron Beck, John Burt, Pam Burt, Evelyn Chapuis, *Carman Dodge*, Keith Dodge, Joe Graumans, Hamilton Greenwood, George Huczek, Ted Snow. (11)

68. PRINCE ALBERT NATIONAL PARK. Marilyn Anions, Susan Carr, Chris Clinton, Eileen Clinton, Michael Fitzsimmons, Teri Jackson, Leanne Martin, *Brad Muir*, Steve Oates, Grant Peregoodoff, Adam Pidwerbeski, Julie Stocki, Colleen Watson, Fred Weil, Mike Wynn. (15)

69. QU'APPELLE VALLEY DAM. Al Hartley, Stan Shadick, *Michael Williams*, Jim Wood. (4)

70. RAYMORE. Anne Harris, Valeri Harris, *Wayne Harris*, Sheila Lamont. (4)

71. READ LAKE. *Daryl Johannesen*, Don Weidl. (2)

72. REGINA. John Allen, Sandy Ayer, Jessie Bailey, Martin Bailey, Margaret Belcher, *Carol Bjorklund*, Lionel Bonneville, Stephane Bonneville, Ryan Csada, Joanne Edwards, Kathy Ferguson, Kay Ferguson, Malcolm Hayes, Wilbur Heinrich, Dale Hjertaas, Estelle Hjertaas, Kerry Hjertaas, Paule Hjertaas, Phyllis Ilsley, Matthew James, Nicholas James, Paul James, Bob Kreba, Wee Lee, Christine MacDonald, Lauren Mang, Scott McKenzie, Yvonne McKenzie, Colin Morrell, Judy Morrell, Rick Morrell, Ron Myers, Mary Ann Nelson, Gwen Norelius, John Pollock, Brian Rainey, Gillian Richardson, Trevor Richardson, Dean Richert, Miriam Richert, Lyle Saigeon, Diane Secoy, Frank Switzer, Ian Switzer, Kathy Winston. (45)

73. ROUND LAKE. Ross Baker, *Doug Francis*, Pat Francis, Joe and Laura Grimeau, Olga MacDonald, Harry and Rita Minovitch, Gary Tinnish. (9)

74. SASKATOON. Norma Allen, Juhachi Asai, Kengo Asai, Mika Asai, Rika Asai, Sumiko Asai, Yuka Asai, Ian Bennett, Garth Besant, Jeff Besant, Joyce Besant, Maria Besant, Robert Besant, Bernard Bisha, Carol Blenkin, Barbara Brokx, Emile Brokx, Muriel Carlson, Bill Cates, Donna Cates, Paul Coutu, Vi Coutu, Amanda Dalglish, Eileen Dalglish, Fred Doner, Ann Dzus, Eric Ehman, Jeffrey Ehman, Helen Fast, Martin Gerard, Silvia Gerard, Colleen Gerwing, Bernadette Gilliland, Marshall Gilliland, *Mary Gilliland*, Sean Gilliland, Bob Godwin, Bernie Gollop, M.F. Gollop, John Hanbidge, Peter Hankowich, Ramona Harms, Martha Ann Helgerson, Adam Houston, David Houston, Margaret Houston, Mary Houston, Stuart Houston, Don Johnston, Janice Laliberte, Debbie Lashta, Don McRobbie, Jo McRobbie, Kathy Meeres, Cathryn Miller, David Miller, Quentin Miller, Sue Mitten, Kevin Moore, Lisa Napier, Menno Nickel, Brian Olson, Ben Rosser, Lynn Rowland, Aleta Silverhorn, Philip Taylor, Ivor Thokle, David Thorpe, Jeff Turple, Hilda Voth, Heather Wagg, Jim Wedgwood, Michael Williams, Jim Wood, Lois Wooding. (75)

75. SCOTT. Dale Booth, *Guy Wapple*. (2)

76. SIMPSON. *Thomas Harper*. (1)

77. SKULL CREEK. Frank Belhof, *James Bennetto*, Ray Bennetto, Doris Bircham, Ralph Bircham, Bob Eccleston, Phyllis Flaig, Corey Wasilow, Harvey Wasilow, Brad Wolfater, Robin Wolfater, Ron Wolfater. (12)

78. SOMME. Sharon Birch, David Black, Louise Butterfield, *Donald Hooper*, Margaret Hooper, Alex Kirk. (6)

79. SPALDING. *Velma Spizawka*, William Spizawka. (2)

80. SPINNEY HILL. *Ed Driver*, Philip Taylor. (2)

81. SPRING VALLEY. Allan Bogdan, Bryan Bogdan, *Flossie Bogdan*, Larry Bogdan, Nick Bogdan, Dean Goin. (6)

82. SPRUCE HOME. *Sharon and Tom Dice*. (2)

83. SQUAW RAPIDS. Anne Harris, Valeri Harris, *Wayne Harris*, Guy Wapple, Robert Wapple. (5)

84. SWIFT CURRENT. Jim Beaty, Meryl Campion, *Ron Jensen*, Velma Kinsman, Max Mirau, Anne Sakata, Ron Sakata, D. Thoreson, Kae Waters, John Weston, Pearl Weston, Betty Welgan, Ron Welgan. (13)

85. TISDALE. *Joyce Mohr*. (1)

86. TOMPKINS. *Raymond Olson*. (1)

87. VAL MARIE. Aaron Bakus, Tobert Bakus, Tyler Cherpin, Nicky Coté, Roy Coté, Logan Grant, Lynn Grant, Judy Facette, Curtis Franklin, Jamie Franklin, Ben McDonald, Donald McDonald, Cheryl Penny, *Jacques Saquet*, Jean-Claude Saquet, Michelle Saquet. (16)

Table 1. COUNT WEATHER CONDITIONS (T°C, Wind Kmph, Snow Cm)

COUNT NAME	Min T°C	Max. T°C	Min. Wind	Max. Wind	Min. Snow	Max. Snow	Sky A.M.	Sky P.M.
1. ABERNETHY-KATEPWA LAKE	-8	+3	30	40	15	30	mostly cloudy	mostly cloudy
2. ARMIT	-10	0	0	35	30	40	partly cloudy	clear
3. BANGOR	-12	-4	15	20	40	50	mostly cloudy	clear
4. BATTLEFORD	-10	-5	10	15		5		
5. BETHUNE	-6	-3	0	10	15	20		clear
6. BIGGAR	-6	-2	20	30	10	30	mostly cloudy	partly cloudy
7. BIG MUDDY LAKE	-1	-1	0	5	0	2	heavy fog	clear
8. BIG RIVER	-10	-5	0	5	25	34	mostly cloudy	mostly cloudy
9. BIRCH HILLS	0	+2	15	30	10	40	clear	clear
10. BORDEN	-5	-3	0	15	25	30	overcast	clear
11. BRIGHTWATER RESERVOIR	-10	-5	0	20	10	20	clear	clear
12. BROADVIEW	-4	+1	10	26	20	30	clear	clear
13. BROMHEAD	-8	-1	10	20	0	2	partly cloudy	partly cloudy
14. CANDLE LAKE	-15	-10	0	5	10	40	mostly cloudy	mostly cloudy
15. CHOICELAND-GRONLID	-18	-6	0	35	30	50	clear	clear
16. CLARK'S CROSSING	-17	-10	0	10	10	60	clear	mostly cloudy
17. CONQUEST-OUTLOOK	-10	-5	0	10	5	15	clear	clear
18. CRAVEN	-13	-6		22		15	clear	clear
19. CROOKED LAKE(A)	0	+1	15	20	25	30	clear	clear
20. CROOKED LAKE(B)	-3	-2	2	10	35	45		overcast
21. CROOKED RIVER	-15	-10	0	10	30	50	partly cloudy	partly cloudy
22. DALMENY	-13	-10	10	19	10	50	clear	partly cloudy
23. DILKE	-6	-3	15	30	0	20	clear	clear
24. DUVAL	-10	-4	0	7	0	30	clear	clear
25. EDAM	-10	-5	15	20	30	40	clear	clear
26. ENDEAVOUR	-18	+1	0	5	14	17	partly cloudy	clear
27. FENTON	-16	-5	0	6	5	25	clear	mostly cloudy
28. FORT QU'APPELLE	-23	-10	0	10	20	25		
29. FORT WALSH	-10	-5	20	60	0	12	partly cloudy	partly cloudy
30. GARDINER DAM	-3	+1	20	50	0	20	partly cloudy	clear
31. GLENTWORTH	-5	+5	5	50	0	2	clear	clear
32. GOOD SPIRIT LAKE	-3	-1	20	25	15	34	mostly cloudy	mostly cloudy
33. GOVENLOCK	-3	+5	0	20	0	5	clear	clear
34. GRASSLANDS NATIONAL PARK	-3	+5	0	50	0	5	clear	mostly clear
35. GRAYSON	-2	+4		40	5	25	clear	clear
36. GRENFELL	-15	-8			0	20		partly cloudy
37. HEPBURN								
38. HUDSON BAY	0	+4	20	40	35	40	mostly clear	mostly clear
39. HUMBOLDT	-10	-5	5	20	10	40	clear	clear
40. INDIAN HEAD	-10	-5	0	5	10	30	moderate fog	
41. KAMSACK	-14	-9	10	15	75	125		
42. KELVINGTON	-26		0	0		75		clear
43. KENASTON	-8	-4	0	15	0	15	mostly clear	mostly clear
44. KILWINNING	-5	-3	10	15	5	65	clear	mostly clear
45. KINDERSLEY	-6	-2	10	14	0	2	mostly clear	mostly clear
46. KINLOCH	-5	-8	0	10	45	60		
47. KUTAWAGAN LAKE	-8	-2	0	20	20	40	mostly clear	clear
48. LARONGE	-10	-1	5	15	40	60	clear	clear
49. LAST MOUNTAIN LAKE W.M.U.	-14	-1	5	20	5	30	clear	clear
50. LEADER	-10	+2	0	5	0	3	mostly clear	clear
51. LIVELONG	-15	-5	0	0		25	mostly clear	mostly clear
52. LOVE-TORCH RIVER	-6	-4	0	5	30	90	overcast	overcast
53. LUSELAND	-6	-1	0	5	22	49	mostly clear	clear
54. MACDOWALL	0	+4	15	20	30	80	mostly clear	partly cloudy
55. MATADOR	-2	+2	0	10	0	10	clear	clear
56. MEADOW LAKE	-6	-2	0	0	24	120	clear	clear
57. MELFORT	-16	-1	0	5	60	110	partly cloudy	mostly clear
58. MELVILLE	-10	0	0	0	20	100	mostly clear	
59. MOOSE JAW	-11	-1	8	12	3	18	mostly clear	mostly clear
60. NAICAM	-5	0		20	15	60	clear	mostly clear
61. NEELY LAKE	-23	-18	0	0	30	45	clear	clear
62. NIPAWIN	-5	-7		5	10	50		mostly clear
63. PIKE LAKE	-2	+3	15	30	20	50		
64. PORCUPINE PLAIN	-28	-20	0	3	30	45	m. clear, light snow	clear
65. PREECEVILLE	-18	-6	0	5	40	65	clear	
66. PRINCE ALBERT(A)								
67. PRINCE ALBERT(B)	-5	+4	5	20	5	25		
68. PRINCE ALBERT NATIONAL PARK	-10	-15	0	10	30	37	overcast	overcast
69. QU'APPELLE VALLEY DAM	-18	-14	0	15	10	60	p. cloudy, light snow	mostly clear
70. RAYMORE	-18	-3	0	20	25	40	clear	clear
71. READ LAKE		-15	25	35	46	50	partly cloudy	mostly cloudy
72. REGINA	-14	-2		25		20	clear	clear
73. ROUND LAKE	-10	-5	0	5	3	20	clear	clear
74. SASKATOON	-10	-1	13	22		26	partly cloudy	mostly clear
75. SCOTT	-17	-10	0	20	0	25	clear	mostly clear
76. SIMPSON	-5	-2	5	7	30	40	clear	clear
77. SKULL CREEK	+4	+5	40	45	0	0	partly cloudy	partly cloudy
78. SOMME	-12	0	5	40	40	45	partly cloudy	partly cloudy
79. SPALDING	-12	-5	0	5	50	70	clear	clear
80. SPINNEY HILL	-5	-1	0	5	0	110		

Table 1. COUNT WEATHER CONDITIONS (Continued) (T˚C, Wind Kmph, Snow Cm)

COUNT NAME	Min T˚C	Max. T˚C	Min. Wind	Max. Wind	Min. Snow	Max. Snow	Sky A.M.	Sky P.M.
81. SPRING VALLEY	-15	-2	10	15	0	30	partly cloudy	partly cloudy
82. SPRUCE HOME	-12	-5	0	0	30	75	overcast	overcast
83. SQUAW RAPIDS	-13	-3	0	15	30	60	mostly clear	mostly clear
84. SWIFT CURRENT	-7	3	0	10	0	10	clear	mostly clear
85. TISDALE	-10	-4	10	15	30	35	clear	clear
86. TOMPKINS	0	+8	10	20	0	0		partly cloudy
87. VAL MARIE	-5	-1	0	14	0	4	mostly clear	clear
88. VANSCOY-DELISLE	-15	-10	0	10	0	20		
89. WARMAN	-12	-8	0	10	30	70	mostly clear	clear
90. WAUCHOPE	-10	-4	0	15	25	50	partly cloudy	mostly cloudy, heavy fog
91. WEYBURN	-3	0	30	35	8	12	mostly clear	mostly clear
92. WHITE BEAR	-12	-5	0	1	0	15	clear	clear
93. WHITE BEAR LAKE	-7	-2	0	12	9	18	overcast	overcast
94. WHITEBEECH	-3	-4	0	0	28	30		overcast
95. WHITEWOOD	-10	-4	0	20	30	50	clear	clear
96. YORKTON	-5	0	0	5		60	overcast, heavy fog	overcast, heavy fog
97. CARRAGANA					45	90		
98. CHRISTOPHER LAKE		-2	0	0	45	60	clear	
99. TURTLE LAKE	-15	-8	0	0			mostly clear	mostly clear

88. VANSCOY-DELISLE. Linda Lahey, *A.R. Smith*, Lois Smith, J.R. Smith. (4)

89. WARMAN. Terry Armstrong, *Todd Arnold*, Pam Martin, Lauraine Newell. (4)

90. WAUCHOPE. *Dale Hjertaas*, Warren Hjertaas. (2)

91. WEYBURN. Leo Belanger, L. Belanger, *Ray Belanger*, G. Bobbitt, E. Brodie, J. Burge, R. Churchill, R. Douglas, F. Garner, R. Gutfriend, B. Layh, P. Layh, C. Marcotte, R. Neville, N. Postey, J. Richelhof, H. Stairmand, S. Stairmand, G. Vince. (19)

92. WHITE BEAR. Darryl Jordheim, Floyd Jordheim, Gary Jordheim, *Sig Jordheim*. (4)

93. WHITE BEAR LAKE. Leo Belanger, Ray Belanger, *Greg Bobbitt*, Ross Douglas, Dick Gutfriend, Nick Postey. (6)

94. WHITEBEECH. John Kereliuk, Ed Terleski, Ida Wotherspoon, *Lindsay Wotherspoon*. (4)

95. WHITEWOOD. Pat Connelly, Boyd Metzler, *John Pollock*. (3)

96. YORKTON. Hazel Bjorgen, *Warren Hjertaas*, James Rushowick, Jeff Rushowick, Patrick Rushowick, Darlene Stakiw, Morris Stakiw, Dorothy Skene, Ed Skene, Harold Wilkinson. (10)

97. CARRAGANA. *Stan Back*, Agnes Chapman, David Chapman, Bill and Eleanor Howse, May Mueller, Margaret Sokoluk. (7)

98. CHRISTOPHER LAKE. Blake and Stella Jones, *Cliff Matthews*. (3)

99. TURTLE LAKE. *E.M. Robinson*, Marie Robinson. (2)

Counts Received Too Late To Include In Table 3.

Although these counts arrived too late to include in their proper place in Table 3 the numbers have been incorporated into the three summary columns at the end of Table 3. All other information relating to these counts are in the appropriate tables except that they are not in the proper alphabetical order. The counts and their reference numbers and the species which should be in Table 3 are reported below in text form:

97. CARRAGANA. 26 December 1991. Gray Partridge, 6; Ruffed Grouse, 3; Northern Hawk Owl, +; Downy Woodpecker, 2; Hairy Woodpecker, 2; Pileated Woodpecker, 1; Gray Jay, 2; Blue Jay, 4; Black-billed Magpie, 4; Common Raven, 3; Black-capped Chickadee, 5; White-breasted Nuthatch, 2; Bohemian Waxwing, 6; Snow Bunting, 55; Pine Grosbeak, 18; Common Redpoll, 15; Evening Gros-

Table 2. COUNT COVERAGE (* indicates counts which conform to the North American standard of all day counts covering a 15 mile diameter circle)

						Habitat Covered (%)											
COUNT NAME	Km by Vehicle	Hours by Vehicle	Km on Foot	Hours on Foot	Hours at Feeders	Coniferous Woods	Mixedwoods	Deciduous Woods	Aspen Grove/Prairie	Aspen Grove/Farmland	Native Prairie	Seeded Pasture	Cultivated Fields	Farmyard	City/town	Open Water	Other
1. ABERNETHY-KATEPWA L.	145	6	1	.5	2					51-75				<5	6-25	<5	
2. ARMIT*	203	10	16	7		6-25	26-50	6-25					6-25	<5	<5		
3. BANGOR	75	2	7	3	5	<5		26-50		<5	<5		26-50	26-50			
4. BATTLEFORD															>75		
5. BETHUNE	25	2.5	1	.75													
6. BIGGAR*	172	11.5	13	6	1					6-25			51-75	26-50	6-25		
7. BIG MUDDY LAKE*	101	8															
8. BIG RIVER	3	.25	2	.75	1.5	26-50									26-50		
9. BIRCH HILLS	142	5	1	1.5	2			6-25		6-25			6-25	6-25	6-25		
10. BORDEN	75	3	1	1				6-25		51-75							
11. BRIGHTWATER RESERVOIR	105	3	5	5				51-75	6-25			<5	6-25	6-25		6-25	
12. BROADVIEW	103	3.5	5	3					51-75		6-25			<5	6-25		
13. BROMHEAD*	166	6.5	1	.5									>75				
14. CANDLE LAKE	167	8	2	1.5	1	26-50	26-50	26-50									
15. CHOICELAND-GRONLID	130	4	2	2		26-50	26-50			26-50				6-25	<5		
16. CLARK'S CROSSING	368	14.5	6.5	5.25				6-25	<5	26-50	<5		26-50	6-25	6-25	<5	<5
17. CONQUEST-OUTLOOK	105	3	3	1				<5	<5	<5	<5	<5	26-50		6-25	<5	
18. CRAVEN	200	12.5	6	5.75													
19. CROOKED LAKE(A)	140	5	5	2				26-50	6-25	6-25		<5	6-25	<5	<5	<5	
20. CROOKED LAKE(B)	30	2	2	.75	2			>75	6-25								
21. CROOKED RIVER	100	3	1	1		6-25	6-25	6-25					26-50	6-25	6-25		
22. DALMENY			19	5						26-50	<5	<5	51-75	6-25	<5	<5	
23. DILKE	120	3.25	7	3.5					6-25	6-25	6-25		6-25	<5	<5		
24. DUVAL	142	5.5	4	1.5	.5					26-50			26-50	6-25	6-25		
25. EDAM	40	2			10				51-75								
26. ENDEAVOUR	40	3.5	2	3						51-75				6-25			
27. FENTON	152	4			1					6-25			51-75				
28. FORT QU'APPELLE	100	8	2	1	8			6-25		6-25			6-25	6-25	6-25	<5	
29. FORT WALSH*	174	15	38	16.5	1		51-75				<5		6-25	6-25			6-25
30. GARDINER DAM*	287	5.5	13	6.5						<5			26-50	26-50		26-50	6-25
31. GOOD SPIRIT LAKE*	100	4	5	2.5	2	<5	<5	6-25	6-25	26-50	<5	6-25	26-50	6-25	<5		
32. GLENTWORTH	182	3	9	5					<5		>75		<5	<5			
33. GOVENLOCK*	316	13	16	8							51-75		26-50	6-25			6-25
34. GRASSLANDS NAT. PARK	211	5	3	2							51-75		6-25	6-25			
35. GRAYSON	50	5	8	1	1			6-25		26-50			6-25	6-25		<5	
36. GRENFELL			5	3													
37. HEPBURN																	
38. HUDSON BAY*	348	12	12	5	3	6-25	6-25	6-25					6-25	6-25	26-50	<5	
39. HUMBOLDT	50	2	1	1	1					26-50	<5		26-50		6-25		
40. INDIAN HEAD	200	8	10	7	6				5-25	26-50	6-25		26-50	6-25	6-25	<5	
41. KAMSACK					18	26-50	26-50		6-25	6-25							<5
42. KELVINGTON	40	2			5					6-25			6-25	51-75			
43. KENASTON	90	9	1	1						51-75					6-25		
44. KILWINNING	67	4.5				<5	6-25	6-25		26-50	<5		26-50	<5	<5		
45. KINDERSLEY	164	4.5								51-75	<5		6-25		<5		
46. KINLOCH	50	2.5	1	.5	8	<5	6-25	6-25		26-50				<5			
47. KUTAWAGAN LAKE	201	4	1	1							6-25		>75				
48. LARONGE	104	5.5	2	.5	1	6-25	51-75								6-25	<5	
49. LAST MOUNTAIN L. W.M.U.*	260	6	2	2							6-25	6-25	>75	6-25			
50. LEADER	50	1	6	3							26-50		6-25	6-25			
51. LIVELONG			4	1	4					6-25					>75		
52. LOVE-TORCH RIVER	138	5.5	1	1	10	<5	26-50			26-50					<5		
53. LUSELAND	72	2.5	16.5	12	1				6-25	26-50	<5	6-25	6-25	6-25	6-25		
54. MACDOWALL	80	3.25	11	3.25	12.5		6-25		51-75					6-25			
55. MATADOR	98	5	5	2							51-75	6-25	6-25	<5			26-50
56. MEADOW LAKE	100	3.5	4	3	10	6-25		6-25		6-25					6-25		
57. MELFORT	20	3	4	2	1	<5	6-25						51-75	<5			
58. MELVILLE	40	1	1	.5	2					26-50			6-25	51-75	6-25		
59. MOOSE JAW	113	7	14	11	2								6-25		6-25		26-50
60. NAICAM	111	5	1	1	4					26-50			26-50				
61. NEELY LAKE	52	4	1	1	7		6-25	26-50					6-25	6-25			
62. NIPAWIN	6	.25	3	2	2		>75								6-25		
63. PIKE LAKE	342	8.25	27	23.5	16			26-50	<5	6-25		<5	6-25	6-25		<5	<5
64. PORCUPINE PLAIN	100	4	2	2	4		6-25	6-25					26-50	6-25	26-50		
65. PREECEVILLE	50	2.25	3.5	2.75		<5	6-25	6-25		6-25		<5	6-25	6-25	6-25	<5	

Table 2. COUNT COVERAGE (Continued) (* indicates counts which conform to the North American standard of all day counts covering a 15 mile diameter circle)

COUNT NAME	Km by Vehicle	Hours by Vehicle	Km on Foot	Hours on Foot	Hours at Feeders	Habitat Covered (%)											
						Coniferous Woods	Mixedwoods	Deciduous Woods	Aspen Grove/Prairie	Aspen Grove/Farmland	Native Prairie	Seeded Pasture	Cultivated Fields	Farmyard	City/town	Open Water	Other
66. PRINCE ALBERT(A)																	
67. PRINCE ALBERT(B)	216	14.5	3	1.5	7				<5						>75		
68. PRINCE ALBERT NAT. PK.*	73	6.5	28	10.5	2	6-25	26-50	6-50							6-25	<5	
69. QU'APPELLE VALLEY DAM	220	6.5	5	2.5				26-50	<5	6-25	<5	<5	26-50	6-25	6-25	<5	
70. RAYMORE*	216	8	5	3	2					26-50			26-50	6-25	<5		
71. READ LAKE			5	5		>75	<5										
72. REGINA*	620	24.5	70	38													
73. ROUND LAKE	118	5	1	1	4				6-25	6-25	26-50		26-50	6-25		<5	
74. SASKATOON*	867	67	111	55	53												
75. SCOTT*	193	6	3	2									26-50	26-50	6-25		
76. SIMPSON	15	2			6					>75	<5		<5				
77. SKULL CREEK	129	9	13	10					6-25	6-25	6-25		26-50	26-50			
78. SOMME	120	16	2	3	4		26-50	6-25					6-25	6-25	6-25		
79. SPALDING	80	2	6	3	2		26-50							6-25	26-50		
80. SPINNEY HILL	308	5.5	.5	.7		<5	<5	6-25		51-75		<5	<5		<5	<5	
81. SPRING VALLEY	126	4.5	4.5	1.5							26-50		51-75	26-50			
82. SPRUCE HOME					3									>75			
83. SQUAW RAPIDS*	90	9	10	5		6-25	51-75	26-50					<5	<5		<5	
84. SWIFT CURRENT	120	10	24	12	12						6-25	6-25	6-25	6-25	6-25	<5	
85. TISDALE	100	3				<5	6-25			51-75							
86. TOMPKINS	30	2.5							26-50		26-50						
87. VAL MARIE	221	11	13	6.5							51-75		<5	6-25	<5	<5	
88. VANSCOY-DELISLE	112	4.7	2	.5	.3				26-50	<5	<5	<5	26-50	<5	6-25		
89. WARMAN	270	10.3	1	.5	1.5					26-50			51-75	6-25	<5		
90. WAUCHOPE	70	2	6	2	2				6-25	26-50				26-50	26-50		
91. WEYBURN	485	13	10	3.5	1	<5	6-25	<5	6-25	26-50	6-25	<5	26-50	6-25	6-25	<5	
92. WHITE BEAR	60	.9	34	12	.25						>75		6-25	<5			
93. WHITE BEAR LAKE	137	4	6	2				26-50		26-50			26-50	<5	6-25		
94. WHITEBEECH	52	3	2	1	5		26-50				6-25		26-50				
95. WHITEWOOD	180	6	3	1	1					26-50			6-25	<5	6-25		
96. YORKTON	45	4	5	3	1										>75	<5	
97. CARRAGANA	45	3	6	4	1		26-50	6-25							6-25		
98. CHISTOPHER LAKE	31	1			16		>75						<5				
99. TURTLE LAKE					8												

beak, 20; House Sparrow, 4. Total species, 16; Total count period species, 17; Species in Table 4 & 5, 0; Individuals in Table 4 & 5, 0; Total count day individuals, 152.

98. CHRISTOPHER LAKE. 26 December 1991. Ruffed Grouse, 2; Northern Hawk Owl, 1; Downy Woodpecker, 1; Hairy Woodpecker, 1; Blue Jay, 4; Black-billed Magpie, 1; Common Raven, 1; Black-capped Chickadee, 4; Red-breasted Nuthatch, 1; White-breasted Nuthatch, 1; Common Redpoll, 2; Evening Grosbeak, 1. Total species, 12; Total count period species, 12; Species in Table 4 & 5, 0; Individuals in Table 4 & 5, 0; Total count day individuals, 20.

99. TURTLE LAKE. 2 January 1992. Bald Eagle, 1; Ruffed Grouse, 2; Great Gray Owl, 2; Downy Woodpecker, 8; Hairy Woodpecker, 10; Gray Jay, 7; Blue Jay, 10; Black-billed Magpie, 5; Common Raven, 25; Black-capped Chickadee, 15; Boreal Chickadee, 1; White-breasted Nuthatch, 4; Pine Grosbeak, 100; Common Redpoll, 25; Hoary Redpoll, 15; Evening Grosbeak, 75. Total species, 17; Total count period species, 17; Species in Table 4 & 5, 1; Individuals in Table 4 & 5, 2; Total count day individuals, 307.

1. ABERNETHY-KATEPWA L.
2. ARMIT
3. BANGOR
4. BATTLEFORD
5. BETHUNE
6. BIGGAR
7. BIG MUDDY
8. BIG RIVER
9. BIRCH HILLS
10. BORDEN
11. BRIGHTWATER RESERVOIR
12. BROADVIEW
13. BROMHEAD
14. CANDLE LAKE
15. CHOICELAND-GRONLID
16. CLARK'S CROSSING
17. CONQUEST-OUTLOOK
18. CRAVEN
19. CROOKED LAKE (A)
20. CROOKED LAKE (B)
21. CROOKED RIVER
22. DALMENY
23. DILKE
24. DUVAL
25. EDAM
26. ENDEAVOUR
27. FENTON
28. FORT QU'APPELLE
29. FORT WALSH
30. GARDINER DAM
31. GLENTWORTH
32. GOOD SPIRIT LAKE
33. GOVENLOCK
34. GRASSLANDS NAT. PK.
35. GRAYSON DISTRICT
36. GRENFELL
37. HEPBURN
38. HUDSON BAY
39. HUMBOLDT
40. INDIAN HEAD
41. KAMSACK
42. KELVINGTON
43. KENASTON
44. KILWINNING
45. KINDERSLEY
46. KINLOCH
47. KUTAWAGAN LAKE
48. LA RONGE
49. LAST MOUNTAIN LAKE
50. LEADER
51. LIVELONG
52. LOVE-TORCH RIVER
53. LUSELAND
54. MACDOWALL
55. MATADOR
56. MEADOW LAKE
57. MELFORT
58. MELVILLE
59. MOOSE JAW
60. NAICAM
61. NEELY LAKE
62. NIPAWIN
63. PIKE LAKE
64. PORCUPINE PLAIN
65. PREECEVILLE
66. PRINCE ALBERT (A)
67. PRINCE ALBERT (B)
68. PRINCE ALBERT N.P.
69. QU'APPELLE VALLEY DAM
70. RAYMORE
71. READ LAKE
72. REGINA
73. ROUND LAKE
74. SASKATOON
75. SCOTT
76. SIMPSON
77. SKULL CREEK
78. SOMME
79. SPALDING
80. SPINNEY HILL
81. SPRING VALLEY
82. SPRUCE HOME
83. SQUAW RAPIDS
84. SWIFT CURRENT
85. TISDALE
86. TOMPKINS
87. VAL MARIE
88. VANSCOY-DELISLE
89. WARMAN
90. WAUCHOPE
91. WEYBURN
92. WHITE BEAR
93. WHITE BEAR LAKE
94. WHITEBEECH
95. WHITEWOOD
96. YORKTON
97. CARRAGANA
98. CHRISTOPHER LAKE
99. TURTLE LAKE

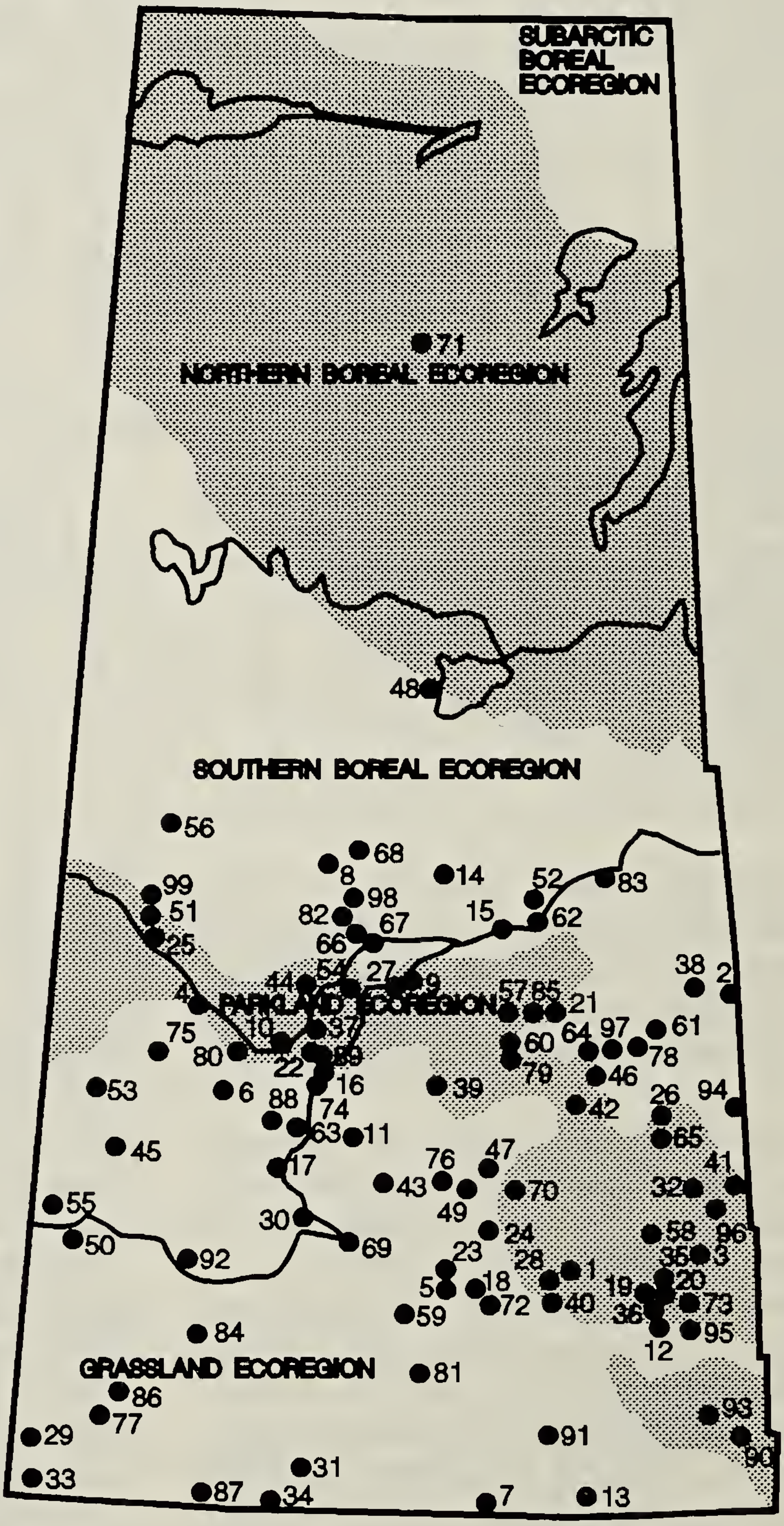


Figure 1. *Location of 1991 counts.*

Table 3-1. SPECIES RECORDED FROM MORE THAN NINE LOCALITIES (+ = a species seen during the count period but not on count day).

SPECIES / LOCATION & DATE	1. ABERNETHY 21 Dec. 1991	2. ARMIT 23 Dec. 1991	3. BANGOR 2 Jan. 1992	4. BATTLEFORD 26 Dec. 1991	5. BETHUNE 15 Dec. 1991	6. BIGGAR 19 Dec. 1991	7. BIG MUDDY L. 30 Dec. 1991	8. BIG RIVER 28 Dec. 1991	9. BIRCH HILLS 21 Dec. 1991	10. BORDEN 1 Jan. 1992
MALLARD	12									
COMMON GOLDENEYE	6									1
BALD EAGLE	+									1
NORTHERN GOSHAWK		1								2
GOLDEN EAGLE	1	1	+			1	3			
MERLIN	+					+				
PRAIRIE FALCON							1			
GRAY PARTRIDGE	23		+		22	49	19			
RING-NECKED PHEASANT							1			
RUFFED GROUSE		13	11	1		+		4	1	
SHARP-TAILED GROUSE	34	1	+		5	73				17
ROCK DOVE	6					174	30		6	41
GREAT HORNED OWL		2	+			2	2	+	1	1
SNOWY OWL	+		+		1	+			3	
NORTHERN HAWK OWL		4								1
GREAT GRAY OWL		4								
DOWNY WOODPECKER	2	2	4	2		4	1		1	1
HAIRY WOODPECKER	1	2	4	2		2			4	
BLACK-BACKED WOODPECKER		2								
PILEATED WOODPECKER		1						+		
HORNED LARK							3			
GRAY JAY		9						2		
BLUE JAY	8	8	3			6	4	4	1	2
BLACK-BILLED MAGPIE	29	14	9	+	3	140	23	1	44	17
COMMON RAVEN	2	34	1	1		18		6	9	4
BLACK-CAPPED CHICKADEE	37	1	30	2	3	35	2	6	26	7
BOREAL CHICKADEE		1								
RED-BREASTED NUTHATCH						4		3		
WHITE-BREASTED NUTHATCH	7	2							1	
AMERICAN ROBIN	1					+			1	
BOHEMIAN WAXWING	58		12			30	60		74	
CEDAR WAXWING										
NORTHERN SHRIKE							1			
EUROPEAN STARLING						22	12			
DARK-EYED JUNCO (Slate-col.)			1							
SNOW BUNTING	28	13	+		40	1417			15	48
WESTERN MEADOWLARK	1									
RUSTY BLACKBIRD						5	1			
PINE GROSBEAK	10		17	3		5			2	17
WHITE-WINGED CROSSBILL	8					16				
COMMON REDPOLL	89	2	52	4		26	43		46	32
HOARY REDPOLL	29								5	
PINE SISKIN										
EVENING GROSBEAK	1	50							6	
HOUSE SPARROW	30		49	5	60	718	27	15	117	116
NO. SPECIES COUNT DAY	23	23	12	8	7	22	20	8	19	16
NO. SPECIES COUNT PERIOD	26	23	18	9	7	26	20	11	19	16
NO. SPECIES TABLE 4 & 5	0	3	0	0	0	3	3	1	0	0
NO. INDIV. TABLE 4 & 5	0	12	0	0	0	17	35	0	0	0
NO. INDIVIDUALS COUNT DAY	423	179	193	20	134	2764	268	41	363	308

Table 3-2. SPECIES RECORDED FROM MORE THAN NINE LOCALITIES (+ = a species seen during the count period but not on count day).

SPECIES / LOCATION & DATE	11. BRIGHTWATER 22 Dec. 1991	12. BROADVIEW 28 Dec. 1991	13. BROMHEAD 2 Jan. 1992	14. CANDLE LAKE 2 Jan. 1992	15. CHOICELAND 2 Jan. 1992	16. CLARK'S CROSS 29 Dec. 1991	17. CONQUEST 26 Dec. 1991	18. CRAVEN 20 Dec. 1991	19. CROOKED L.(A) 27 Dec. 1991	20. CROOKED L.(B) 30 Dec. 1991
MALLARD									2	
COMMON GOLDENEYE						25				
BALD EAGLE										2
NORTHERN GOSHAWK		1			2				1	
GOLDEN EAGLE	1		2						4	
MERLIN										
PRAIRIE FALCON			1							
GRAY PARTRIDGE	19	11				51	13		13	10
RING-NECKED PHEASANT			3							
RUFFED GROUSE		1		4	3			3	1	
SHARP-TAILED GROUSE	1	61	42		17	25			134	14
ROCK DOVE		6			48	50	40	4	3	
GREAT HORNED OWL			4		1		1			
SNOWY OWL	2	+	1		1	3				1
NORTHERN HAWK OWL				2	2					
GREAT GRAY OWL				1						
DOWNY WOODPECKER	1	1		3	7	1	1	2	3	5
HAIRY WOODPECKER	3	1		2	3			1	4	1
BLACK-BACKED WOODPECKER				1	1					
PILEATED WOODPECKER				3	2					
HORNED LARK			34							
GRAY JAY				26	19					
BLUE JAY		1		2	13		1	11	7	5
BLACK-BILLED MAGPIE	16	30	4	14	28	115	20	50	47	6
COMMON RAVEN	4	4		49	62	3				1
BLACK-CAPPED CHICKADEE	8	22		50	11	15	11	31	44	33
BOREAL CHICKADEE				21	2					
RED-BREASTED NUTHATCH				10	1					
WHITE-BREASTED NUTHATCH		3		1					3	6
AMERICAN ROBIN										
BOHEMIAN WAXWING	46	85			18	81		30	56	23
CEDAR WAXWING										34
NORTHERN SHRIKE		+					1	3	1	
EUROPEAN STARLING		7	17			32	20			
DARK-EYED JUNCO (Slate-col.)	1									9
SNOW BUNTING	1	15	294		172	108	30			
WESTERN MEADOWLARK										
RUSTY BLACKBIRD	4									
PINE GROSBEAK	13	21		13	32	7	5	16	17	
WHITE-WINGED CROSSBILL				1	14					
COMMON REDPOLL	141	40	326	34	112	2	49	176	138	55
HOARY REDPOLL			3	1	2					
PINE SISKIN										4
EVENING GROSBEAK				95	8					6
HOUSE SPARROW	10	178	140		68	954	66	187	20	31
NO. SPECIES COUNT DAY	16	18	14	21	28	15	13	12	18	19
NO. SPECIES COUNT PERIOD	16	20	14	21	28	15	13	12	18	19
NO. SPECIES TABLE 4 & 5	0	0	1	1	2	1	0	1	0	1
NO. INDIV. TABLE 4 & 5	0	0	33	1	2	1	0	8	0	2
NO. INDIVIDUALS COUNT DAY	271	488	904	334	651	1473	258	522	498	248

Table 3-3. SPECIES RECORDED FROM MORE THAN NINE LOCALITIES (+ = a species seen during the count period but not on count day).

21. CROOKED R. 24 Dec. 1991	22. DALMENY 20 Dec. 1991	23. DILKE 22 Dec. 1991	24. DUVAL 28 Dec. 1991	25. EDAM 29 Dec. 1991	26. ENDEAVOUR 25 Dec. 1991	27. FENTON 26 Dec. 1991	28. FT. QU'APPELLE 17. Dec. 1991	29. FORT WALSH 14 Dec. 1991	30. GARDINER DAM 16 Dec. 1991	LOCATION & DATE SPECIES
							37	5	2800	MALLARD
							17		53	COMMON GOLDENEYE
							1	+	4	BALD EAGLE
2					+		2	+	1	NORTHERN GOSHAWK
		+		1			+	6	2	GOLDEN EAGLE
							+			MERLIN
								+		PRAIRIE FALCON
		68	24		+		30	4	88	GRAY PARTRIDGE
							3	4		RING-NECKED PHEASANT
+					2		1			RUFFED GROUSE
2		9	12	1	6	10	3	1	24	SHARP-TAILED GROUSE
40	2	1	26	25	17	1	2	2	102	ROCK DOVE
1	1	+	2	4		+	+	5	2	GREAT HORNED OWL
+			1	2			+			SNOWY OWL
4					1	+				NORTHERN HAWK OWL
1					1					GREAT GRAY OWL
2			1	6	1	3	7	9	1	DOWNY WOODPECKER
1			2	4	1	2	6	2		HAIRY WOODPECKER
								1		BLACK-BACKED WOODPECKER
										PILEATED WOODPECKER
	+							1	4	HORNED LARK
4			1		4		+			GRAY JAY
11		3	1	6	3	2	9		6	BLUE JAY
36	10	14	30	14	2	24	36	121	74	BLACK-BILLED MAGPIE
41				1	27	9	+		1	COMMON RAVEN
7	1	3	22	10	13	13	68	72	9	BLACK-CAPPED CHICKADEE
										BOREAL CHICKADEE
							2	62		RED-BREASTED NUTHATCH
						1	13			WHITE-BREASTED NUTHATCH
									2	AMERICAN ROBIN
	20		29	6			118	41	141	BOHEMIAN WAXWING
				10	5		+			CEDAR WAXWING
1							+	6	1	NORTHERN SHRIKE
						12				EUROPEAN STARLING
									1	DARK-EYED JUNCO (Slate-col.)
38		18	6		75	35	+	165	103	SNOW BUNTING
		+							1	WESTERN MEADOWLARK
				1	1		2	6	2	RUSTY BLACKBIRD
32	1			10	4	+	12	19	22	PINE GROSBEAK
								41		WHITE-WINGED CROSSBILL
75	+	79		10		6	3	91	34	COMMON REDPOLL
4					3		+	2		HOARY REDPOLL
										PINE SISKIN
100					1	+	+			EVENING GROSBEAK
200	30	157	493	10	20	13	171	67	383	HOUSE SPARROW
21	7	9	14	17	20	13	25	34	30	NO. SPECIES COUNT DAY
23	9	12	15	18	22	17	39	39	30	NO. SPECIES COUNT PERIOD
1	0	0	1	1	1	0	7	15	5	NO. SPECIES TABLE 4 & 5
1	0	0	0	0	1	0	13	149	261	NO. INDIV. TABLE 4 & 5
603	65	352	650	121	188	131	556	882	4122	NO. INDIVIDUALS COUNT DAY

Table 3-4. SPECIES RECORDED FROM MORE THAN NINE LOCALITIES (+ = a species seen during the count period but not on count day).

SPECIES / LOCATION & DATE	31. GLENTWORTH 19 Dec. 1991	32. GOOD SPIRIT L. 22 Dec. 1991	33. GOVENLOCK 15 Dec. 1991	34. GRASSLANDS 28 Dec. 1991	35. GRAYSON 21 Dec. 1991	36. GRENFELL 26 Dec. 1991	37. HEPBURN 31 Dec. 1991	38. HUDSON BAY 21 Dec. 1991	39. HUMBOLDT 26 Dec. 1991	40. INDIAN HEAD 29 Dec. 1991
MALLARD					2			1		9
COMMON GOLDENEYE										2
BALD EAGLE	+			1						+
NORTHERN GOSHAWK		+						1	+	
GOLDEN EAGLE	4		5	3						
MERLIN									+	
PRAIRIE FALCON	1		1	1						+
GRAY PARTRIDGE	17	14	5	19					25	96
RING-NECKED PHEASANT	14		4	62						
RUFFED GROUSE		1			+			1	2	
SHARP-TAILED GROUSE	32	16	45	44	37			12	7	30
ROCK DOVE	42	13	100	3				115	12	23
GREAT HORNED OWL	+	+	5	+				+	1	2
SNOWY OWL										3
NORTHERN HAWK OWL								3		
GREAT GRAY OWL								+		
DOWNY WOODPECKER	1	12		1	4	1		1	+	9
HAIRY WOODPECKER		11			3	1	1	1	1	9
BLACK-BACKED WOODPECKER										
PILEATED WOODPECKER		+								
HORNED LARK	426		75	136						
GRAY JAY								16		+
BLUE JAY		4			1		1	29	2	11
BLACK-BILLED MAGPIE	41	38	13	49	17		1	72	32	51
COMMON RAVEN		6			1			261	4	
BLACK-CAPPED CHICKADEE	2	61			18	2	5	35	35	56
BOREAL CHICKADEE								3		
RED-BREASTED NUTHATCH								1		2
WHITE-BREASTED NUTHATCH		3					1	1	+	6
AMERICAN ROBIN	1			1						
BOHEMIAN WAXWING	17	2			135	3		30		107
CEDAR WAXWING		+							6	9
NORTHERN SHRIKE	1	+	3	+				+		1
EUROPEAN STARLING	4	1	1	2					4	
DARK-EYED JUNCO (Slate-col.)	4			3						1
SNOW BUNTING	1022	35	581	168	6			1255	+	200
WESTERN MEADOWLARK	1			1						1
RUSTY BLACKBIRD	4			3				+		
PINE GROSBEAK		22					2	47	15	6
WHITE-WINGED CROSSBILL								4		
COMMON REDPOLL	48	40	156	49	24		2	21	45	197
HOARY REDPOLL	2	3	1					8		
PINE SISKIN								+		
EVENING GROSBEAK		+						188		
HOUSE SPARROW	165	42	421	416	2	85	6	40	50	96
NO. SPECIES COUNT DAY	30	18	19	25	13	6	9	25	15	27
NO. SPECIES COUNT PERIOD	32	24	19	29	14	6	9	31	21	31
NO. SPECIES TABLE 4 & 5	9	0	5	9	1	1	1	2	1	4
NO. INDIV. TABLE 4 & 5	401	0	484	86	2	1	1	1	0	4
NO. INDIVIDUALS COUNT DAY	2250	324	1900	1048	253	93	20	2147	241	931

Table 3-5. SPECIES RECORDED FROM MORE THAN NINE LOCALITIES (+ = a species seen during the count period but not on count day).

41. KAMSACK 26 Dec. 1991	42. KELVINGTON 14 Dec. 1991	43. KENASTON 23 Dec. 1991	44. KILWINNING 22 Dec. 1991	45. KINDERSLEY 31 Dec. 1991	46. KINLOCH 29 Dec. 1991	47. KUTAWAGAN L. 27 Dec. 1991	48. LA RONGE 26 Dec. 1991	49. LAST MT. LAKE 26 Dec. 1991	50. LEADER 20 Dec. 1991	LOCATION & DATE SPECIES
										MALLARD
										COMMON GOLDENEYE
									2	BALD EAGLE
										NORTHERN GOSHAWK
		+						2	2	GOLDEN EAGLE
										MERLIN
										PRAIRIE FALCON
40	12	75		8	+	39		137	21	GRAY PARTRIDGE
									19	RING-NECKED PHEASANT
					+		+			RUFFED GROUSE
8		+	3		3			17	1	SHARP-TAILED GROUSE
		18	1		+	1		106		ROCK DOVE
1			1		+			1	1	GREAT HORNED OWL
		+		7		3		8		SNOWY OWL
					1					NORTHERN HAWK OWL
1										GREAT GRAY OWL
3	2	+	1		1		+	1	1	DOWNY WOODPECKER
6	3	+	1		2		1			HAIRY WOODPECKER
										BLACK-BACKED WOODPECKER
7					1		1		1	PILEATED WOODPECKER
			3					2		HORNED LARK
					1		13			GRAY JAY
30	10	1	2		21	1	5			BLUE JAY
19	9	13	47	8	11	43	3	97	48	BLACK-BILLED MAGPIE
28	8	+	4		19		106			COMMON RAVEN
62	20	2	23		26		9	1	2	BLACK-CAPPED CHICKADEE
4			1				2			BOREAL CHICKADEE
11			1				1			RED-BREASTED NUTHATCH
4					1					WHITE-BREASTED NUTHATCH
4										AMERICAN ROBIN
280	12				1				2	BOHEMIAN WAXWING
20										CEDAR WAXWING
		+	1							NORTHERN SHRIKE
								2		EUROPEAN STARLING
16							+			DARK-EYED JUNCO (Slate-col.)
100	100	254	370		12	165		533		SNOW BUNTING
								1		WESTERN MEADOWLARK
										RUSTY BLACKBIRD
222	6	27	6		11	1	23	4		PINE GROSBEAK
										WHITE-WINGED CROSSBILL
71	30	1	97		19	8	59	71	20	COMMON REDPOLL
			2		6		7		10	HOARY REDPOLL
30										PINE SISKIN
429	50				20		15			EVENING GROSBEAK
186	20	17	80	56	34	125		553	62	HOUSE SPARROW
26	13	9	18	4	18	9	13	19	14	NO. SPECIES COUNT DAY
27	13	16	18	4	22	9	16	19	14	NO. SPECIES COUNT PERIOD
3	0	0	0	0	0	0	0	3	0	NO. SPECIES TABLE 4 & 5
19	0	0	0	0	0	0	0	3	0	NO. INDIV. TABLE 4 & 5
1601	282	408	644	79	190	386	245	1542	192	NO. INDIVIDUALS COUNT DAY

Table 3-6. SPECIES RECORDED FROM MORE THAN NINE LOCALITIES (+ = a species seen during the count period but not on count day).

SPECIES / LOCATION & DATE	51. LIVELONG 20 Dec. 1991	52. LOVE-TORCH R. 31 Dec. 1991	53. LUSELAND 27 Dec. 1991	54. MACDOWALL 21 Dec. 1991	55. MATADOR 27 Dec. 1991	56. MEADOW LAKE 29 Dec. 1991	57. MELFORT 14 Dec. 1991	58. MELVILLE 25 Dec. 1991	59. MOOSE JAW 26 Dec. 1991	60. NAICAM 27 Dec. 1991
MALLARD										
COMMON GOLDENEYE										
BALD EAGLE					1					
NORTHERN GOSHAWK			1							1
GOLDEN EAGLE					+					
MERLIN										
PRAIRIE FALCON			1		1				1	
GRAY PARTRIDGE		6	139		4				31	6
RING-NECKED PHEASANT									7	
RUFFED GROUSE	+	6				1			15	
SHARP-TAILED GROUSE			17	10	9			+		4
ROCK DOVE	10	63	86	6	8	12		+	242	1
GREAT HORNED OWL		2	+		+				1	1
SNOWY OWL	+		3		+	2		+	2	
NORTHERN HAWK OWL		3		1						
GREAT GRAY OWL		1								
DOWNY WOODPECKER	4	6	3	4	1	2	2		9	1
HAIRY WOODPECKER	6	7	5	4		5			1	1
BLACK-BACKED WOODPECKER		+		1						
PILEATED WOODPECKER		3		+						
HORNED LARK			1							
GRAY JAY		4		2		2				
BLUE JAY	8	22	6	19		3	3			1
BLACK-BILLED MAGPIE	2	13	34	3	5	19	5	2	45	13
COMMON RAVEN	4	70		8		54	6	+		2
BLACK-CAPPED CHICKADEE	12	93	15	58	9	19	3	+	29	6
BOREAL CHICKADEE										
RED-BREASTED NUTHATCH									7	
WHITE-BREASTED NUTHATCH		4		1		2			3	
AMERICAN ROBIN										
BOHEMIAN WAXWING		5	18		70	11	30		33	7
CEDAR WAXWING			1			9				
NORTHERN SHRIKE	+				1					
EUROPEAN STARLING			8							6
DARK-EYED JUNCO (Slate-col.)		25				2			2	
SNOW BUNTING	50	129	650	60	7	190	100		35	170
WESTERN MEADOWLARK										
RUSTY BLACKBIRD										
PINE GROSBEAK	20	41	+	9	+	23		8	4	16
WHITE-WINGED CROSSBILL				+						
COMMON REDPOLL	30	385	52	24		44		8	40	2
HOARY REDPOLL				6	40					
PINE SISKIN		25				17				
EVENING GROSBEAK	20	306		121		102			+	
HOUSE SPARROW	50	80	369	30		299	100	15	475	244
NO. SPECIES COUNT DAY	12	25	19	18	12	22	8	4	22	17
NO. SPECIES COUNT PERIOD	16	26	21	21	16	22	8	9	24	17
NO. SPECIES TABLE 4 & 5	1	2	1	1	0	2	0	0	4	0
NO. INDIV. TABLE 4 & 5	0	4	1	0	0	8	0	0	5	0
NO. INDIVIDUALS COUNT DAY	216	1303	1410	367	156	826	249	33	987	482

Table 3-7. SPECIES RECORDED FROM MORE THAN NINE LOCALITIES (+ = a species seen during the count period but not on count day).

61. NEELY LAKE 17 Dec. 1991	62. NIPAWIN 27 Dec. 1991	63. PIKE LAKE 21 Dec. 1991	64. PORCUPINE PL. 14 Dec. 1991	65. PREECEVILLE 26 Dec. 1991	66. PRINCE ALBERT(A) 21 Dec. 1991	67. PRINCE ALBERT(B) 22 Dec. 1991	68. P.A. NAT. PARK 15 Dec. 1991	69. QU'APPELLE V. 14 Dec. 1991	70. RAYMORE 25 Dec. 1991	LOCATION & DATE SPECIES
										MALLARD
								1		COMMON GOLDENEYE
			1					1	+	BALD EAGLE
		1	+				+		2	NORTHERN GOSHAWK
								2		GOLDEN EAGLE
						+			1	MERLIN
										PRAIRIE FALCON
7		31	5					19	17	GRAY PARTRIDGE
										RING-NECKED PHEASANT
+			1				1		4	RUFFED GROUSE
33		150		5				54	116	SHARP-TAILED GROUSE
4		15		12		333		2	211	ROCK DOVE
+			1			1	+	3	4	GREAT HORNED OWL
									1	SNOWY OWL
1			2							NORTHERN HAWK OWL
							+			GREAT GRAY OWL
6	2	4	2	1	2	4	2		2	DOWNY WOODPECKER
5	1	8	4	1	2	4	4	2	3	HAIRY WOODPECKER
							1			BLACK-BACKED WOODPECKER
2					1		2		+	PILEATED WOODPECKER
								6	1	HORNED LARK
2			2				3			GRAY JAY
18	4	18	24	2	2	11		4	4	BLUE JAY
6	+	133	35	17	2	42	9	64	72	BLACK-BILLED MAGPIE
11	51	21	146	9		142	18		1	COMMON RAVEN
36	19	134	50	8	6	36	41	6	11	BLACK-CAPPED CHICKADEE
							4			BOREAL CHICKADEE
1		3					1		+	RED-BREASTED NUTHATCH
3	1	6	4		2	1	1			WHITE-BREASTED NUTHATCH
	+	3				+			1	AMERICAN ROBIN
	+	362	15		8	417		31	+	BOHEMIAN WAXWING
										CEDAR WAXWING
		3				2		1	2	NORTHERN SHRIKE
		19						1	4	EUROPEAN STARLING
+	+	1							2	DARK-EYED JUNCO (Slate-col.)
33		170	15	17		6		269	362	SNOW BUNTING
									1	WESTERN MEADOWLARK
									+	RUSTY BLACKBIRD
53	4	158	23	27	10	9		23	17	PINE GROSBEAK
		4					18		4	WHITE-WINGED CROSSBILL
11	+	279	2	46	8	1	7	79	36	COMMON REDPOLL
8		3							2	HOARY REDPOLL
						14				PINE SISKIN
49	22	2	88	22	20	14			+	EVENING GROSBEAK
94		177	103	10		189		217	463	HOUSE SPARROW
20	8	25	19	13	11	19	14	21	27	NO. SPECIES COUNT DAY
23	13	25	20	13	11	22	18	21	35	NO. SPECIES COUNT PERIOD
0	0	1	0	0	0	2	1	2	3	NO. SPECIES TABLE 4 & 5
0	0	2	0	0	0	1	0	2	1	NO. INDIV. TABLE 4 & 5
383	104	1707	523	177	63	1227	112	787	1345	NO. INDIVIDUALS COUNT DAY

Table 3-8. SPECIES RECORDED FROM MORE THAN NINE LOCALITIES (+ = a species seen during the count period but not on count day).

SPECIES / LOCATION & DATE	71. READ LAKE 19 Dec. 1991	72. REGINA 26 Dec. 1991	73. ROUND LAKE 1 Jan. 1992	74. SASKATOON 26 Dec. 1991	75. SCOTT 29 Dec. 1991	76. SIMPSON 26 Dec. 1991	77. SKULL CREEK 27 Dec. 1991	78. SOMME 16 Dec. 1991	79. SPALDING 27 Dec. 1991	80. SPINNEY HILL 28 Dec. 1991
MALLARD		96	+	6						
COMMON GOLDENEYE				70						
BALD EAGLE										
NORTHERN GOSHAWK		+		1			1	+		
GOLDEN EAGLE			+				+			
MERLIN		1		5			1			
PRAIRIE FALCON										
GRAY PARTRIDGE		93	9	75	113	27			19	
RING-NECKED PHEASANT		1					+			
RUFFED GROUSE			4	4			2	2	5	
SHARP-TAILED GROUSE		7	8	70			18	2		42
ROCK DOVE		968		2023	79		2	16	7	25
GREAT HORNED OWL		7	+	6	2	2	3	+		
SNOWY OWL		7		1	1					
NORTHERN HAWK OWL								2		
GREAT GRAY OWL										
DOWNY WOODPECKER	2	7	8	37	3	2	11	3	2	1
HAIRY WOODPECKER		4	7	36	3	2	2	1	1	3
BLACK-BACKED WOODPECKER				+				+		
PILEATED WOODPECKER								+		1
HORNED LARK							10			
GRAY JAY	4							4		
BLUE JAY		3	4	86	2	9	1	49	2	8
BLACK-BILLED MAGPIE		79	5	648	55	7	65	38	9	58
COMMON RAVEN	2		2	7				78	1	2
BLACK-CAPPED CHICKADEE		37	35	390	21	17	70	28	6	30
BOREAL CHICKADEE								8		
RED-BREASTED NUTHATCH		8		58	3					
WHITE-BREASTED NUTHATCH		3	6	10			1	1		
AMERICAN ROBIN		6		1						
BOHEMIAN WAXWING		26	60	1932	10	23	20	+		
CEDAR WAXWING		27		22						
NORTHERN SHRIKE					1		3	+		
EUROPEAN STARLING				11	13		5		5	
DARK-EYED JUNCO (Slate-col.)		7	3	7				1		
SNOW BUNTING		12		5	445	37	+	+	1	
WESTERN MEADOWLARK										
RUSTY BLACKBIRD		2		1			5			
PINE GROSBEAK			10	110	11		1	20	4	4
WHITE-WINGED CROSSBILL		67		168	45					12
COMMON REDPOLL	3	13	38	688	65	3	60	20	24	453
HOARY REDPOLL			22	1	1			4		1
PINE SISKIN				16						
EVENING GROSBEAK			20	7		7		20		6
HOUSE SPARROW		1209	50	3759	418	30	202	177	50	58
NO. SPECIES COUNT DAY	4	29	17	41	19	12	23	20	15	17
NO. SPECIES COUNT PERIOD	4	31	21	42	19	12	26	27	15	17
NO. SPECIES TABLE 4 & 5	0	9	1	10	0	0	3	1	1	2
NO. INDIV. TABLE 4 & 5	0	456	0	34	0	0	54	1	1	2
NO. INDIVIDUALS COUNT DAY	11	3146	291	10295	1291	166	537	475	136	706

Table 3-9. SPECIES RECORDED FROM MORE THAN NINE LOCALITIES (+ = a species seen during the count period but not on count day).

81. SPRING VALLEY 24 Dec. 1991	82. SPRUCE HOME 30 Dec. 1991	83. SQUAW RAPIDS 22 Dec. 1991	84. SWIFT CURRENT 29 Dec. 1991	85. TISDALE 25 Dec. 1991	86. TOMPKINS 2 Jan. 1992	87. VAL MARIE 15 Dec. 1991	88. VANSCOY 29 Dec. 1991	89. WARMAN 1 Jan. 1992	90. WAUCHOPE 28 Dec. 1991	LOCATION & DATE SPECIES
		6	+			15				MALLARD
		26	+							COMMON GOLDENEYE
		3								BALD EAGLE
1		1								NORTHERN GOSHAWK
2					2	1				GOLDEN EAGLE
						1				MERLIN
1										PRAIRIE FALCON
92			20	6		+	18	69	18	GRAY PARTRIDGE
						6			1	RING-NECKED PHEASANT
	1	5		1					2	RUFFED GROUSE
26		5			5	12		11	68	SHARP-TAILED GROUSE
23			118			13	50	27	16	ROCK DOVE
3		2				10	1	1		GREAT HORNED OWL
2				1			2	1		SNOWY OWL
		3								NORTHERN HAWK OWL
		+								GREAT GRAY OWL
	2	3	1	3		2	1	2	7	DOWNY WOODPECKER
	2	8		5			1	2	4	HAIRY WOODPECKER
		2								BLACK-BACKED WOODPECKER
		1								PILEATED WOODPECKER
52						410				HORNED LARK
		11	+						+	GRAY JAY
	4	12		6						BLUE JAY
18		37	36		8	52	20	190	11	BLACK-BILLED MAGPIE
	1	97						1		COMMON RAVEN
	11	31		10		16	24	11	23	BLACK-CAPPED CHICKADEE
	1	15								BOREAL CHICKADEE
		4	8							RED-BREASTED NUTHATCH
	1	1	1						1	WHITE-BREASTED NUTHATCH
			1							AMERICAN ROBIN
		+					10	18		BOHEMIAN WAXWING
			17							CEDAR WAXWING
		1				3			1	NORTHERN SHRIKE
		11	15			6				EUROPEAN STARLING
1										DARK-EYED JUNCO (Slate-col.)
86	25	9	+			218	37	2		SNOW BUNTING
+										WESTERN MEADOWLARK
										RUSTY BLACKBIRD
	22	11	7	15				35		PINE GROSBEAK
		6	18					+		WHITE-WINGED CROSSBILL
54	13	49	33		110	600	7	61	226	COMMON REDPOLL
	2	1				2		4	2	HOARY REDPOLL
	+		+							PINE SISKIN
	12	83		10						EVENING GROSBEAK
282		25	592	20	75	280	80	401	94	HOUSE SPARROW
15	13	38	15	10	5	18	12	17	14	NO. SPECIES COUNT DAY
16	14	41	24	10	5	19	12	18	15	NO. SPECIES COUNT PERIOD
1	0	12	6	0	0	1	0	1	0	NO. SPECIES TABLE 4 & 5
1	0	60	9	0	0	1	0	1	0	NO. INDIV. TABLE 4 & 5
644	97	529	876	77	200	1648	251	837	474	NO. INDIVIDUALS COUNT DAY

Table 3-10. SPECIES RECORDED FROM MORE THAN NINE LOCALITIES (+ = a species seen during the count period but not on count day).

LOCATION & DATE SPECIES	91. WEYBURN 21 Dec. 1991	92. WHITE BEAR 29 Dec. 1991	93. WHITE BEAR L. 19 Dec. 1991	94. WHITEBEECH 27 Dec. 1991	95. WHITEWOOD 2 Jan. 1992	96. YORKTON 29 Dec. 1991	TOTAL INDIVIDUALS	NO. OF COUNTS COUNT DAY	NO. OF COUNTS COUNT PERIOD
MALLARD						19	3010	12	14
COMMON GOLDENEYE							201	9	10
BALD EAGLE	+			+			19	12	19
NORTHERN GOSHAWK		+					22	17	26
GOLDEN EAGLE	1	3					49	21	28
MERLIN	+						9	5	10
PRAIRIE FALCON	+	+					9	9	13
GRAY PARTRIDGE	208	20	9	+	+		2019	54	60
RING-NECKED PHEASANT	9	2					136	14	15
RUFFED GROUSE							110	33	40
SHARP-TAILED GROUSE	75	37	45	+	69		1645	59	63
ROCK DOVE	113	200	13		11	8	5777	64	66
GREAT HORNED OWL	1	1			+		93	40	57
SNOWY OWL	+	3					62	25	36
NORTHERN HAWK OWL			1				32	16	18
GREAT GRAY OWL							11	7	10
DOWNY WOODPECKER	5		4	2	1	9	295	82	85
HAIRY WOODPECKER	3		15	2	3	3	271	72	73
BLACK-BACKED WOODPECKER							9	7	10
PILEATED WOODPECKER			2	+			29	15	21
HORNED LARK	41						1205	16	17
GRAY JAY							138	21	25
BLUE JAY			16	5	1	6	616	71	71
BLACK-BILLED MAGPIE	28	46	18	30	47	10	3629	93	95
COMMON RAVEN			1	30	1	11	1520	58	61
BLACK-CAPPED CHICKADEE	13	2	91	15	20	43	2510	90	91
BOREAL CHICKADEE							63	12	12
RED-BREASTED NUTHATCH	2					1	195	23	24
WHITE-BREASTED NUTHATCH	2		11		2	5	132	42	43
AMERICAN ROBIN	+		2	+	+		24	12	18
BOHEMIAN WAXWING	+		80		+	177	4886	51	57
CEDAR WAXWING					+	20	180	12	15
NORTHERN SHRIKE			2		1		41	23	31
EUROPEAN STARLING	+	+					240	25	27
DARK-EYED JUNCO (Slate-col.)	27		1	+		3	118	21	25
SNOW BUNTING	1513	240	2	130	50		12782	66	72
WESTERN MEADOWLARK	1	3					11	9	11
RUSTY BLACKBIRD		+	8			1	46	15	18
PINE GROSBEAK	+		5	+	13		1503	66	71
WHITE-WINGED CROSSBILL							426	15	17
COMMON REDPOLL	93	50	54	10	57	31	6534	88	90
HOARY REDPOLL	2				6		210	34	35
PINE SISKIN	1						107	7	10
EVENING GROSBEAK	+		13	75			2084	37	43
HOUSE SPARROW	773	200	52	10	160	250	18957	88	88
NO. SPECIES COUNT DAY	27	13	24	10	15	17			
NO. SPECIES COUNT PERIOD	38	17	24	18	20	17			
NO. SPECIES TABLE 4 & 5	9	0	2	1	0	1			
NO. INDIV. TABLE 4 & 5	465	0	11	0	0	1			
NO. INDIVIDUALS COUNT DAY	3376	807	456	309	442	598			

Table 4. SPECIES SEEN ON NINE OR FEWER COUNTS

SPECIES	LOCATION AND NUMBER
COMMON LOON	Squaw Rapids, 1
YELLOW-BILLED LOON	Gardiner Dam, 1
AMERICAN WHITE PELICAN	Love-Torch River, 2
TRUMPETER SWAN	Fort Qu'appelle, +
CANADA GOOSE	Endeavour, 1; Fort Qu'appelle, 1; Regina, 427; Squaw Rapids, 1
AM. GREEN-WINGED TEAL	Fort Walsh, 1
LESSER SCAUP	Fort Qu'appelle, 4; Gardiner Dam, 1
HARLEQUIN DUCK	Fort Qu'appelle, +
BUFFLEHEAD	Fort Qu'appelle, +; Humboldt, +; Squaw Rapids, 1
COMMON MERGANSER	Gardiner Dam, 257; Indian Head, 2; Squaw Rapids, 5
TURKEY VULTURE	Grayson, 2
COOPER'S HAWK	Indian Head, 1
RED-TAILED HAWK	Regina, +
ROUGH-LEGGED HAWK	Glentworth, 2; Govenlock, 2; Grasslands Nat. Park, +; Qu'appelle V. Dam, 1
PEREGRINE FALCON	Crooked River, 1
GYRFALCON	Duval, +; Gardiner Dam, 1; Hudson Bay, +; Luseland, 1; Prince Albert(B), 1; Qu'appelle Valley Dam, 1; Weyburn, +
SPRUCE GROUSE	Armit, 6; Big River, +; Meadow L., 6; Prince Albert National Park, +; Squaw Rapids, 4; Turtle Lake, 2
SAGE GROUSE	Ft. Walsh, +; Glentworth, 17; Govenlock, 14; Grasslands Nat. Park, +
WILD TURKEY	Fort Qu'appelle, 4; Fort Walsh, 6; Skull Creek, 1
MOURNING DOVE	Edam, +; Glentworth, 1; Whitebeech, +
BARRED OWL	Squaw Rapids, +
LONG-EARED OWL	Fort Walsh, 1
SHORT-EARED OWL	Glentworth, 2; Grasslands National Park, 1; Last Mountain Lake, 1; Moose Jaw, +; Raymore, +; Spring Valley, 1; Val Marie, 1
BOREAL OWL	Choiceland-Gronlid, 1
NORTHERN SAW-WHET OWL	Kamsack, +
RED-HEADED WOODPECKER	White Bear Lake, 1
THREE-TOED WOODPECKER	Armit, 3; Candle Lake, 1; Choiceland-Gronlid, 1; Fort Walsh, +; Hudson Bay, 1; Somme, 1; Squaw Rapids, 2
NORTHERN FLICKER	Ft. Qu'appelle, 4; Moose Jaw, 3; Pike L., 2; Prince Albert(B), +; Regina, 10; Saskatoon, 12; Spinney Hill, 1; Swift Current, +; Weyburn, +
AMERICAN CROW	Fort Walsh, 1; Grenfell, 1; Moose Jaw, 1; Regina, 3; Saskatoon, 1
BROWN CREEPER	Crooked Lake(B), 2; Fort Walsh, 1; Saskatoon, 2; Squaw Rapids, 1
GOLDEN-CROWNED KINGLET	Ft. Walsh, 16; Raymore, +; Saskatoon, 1; Squaw Rapids, 3; Swift Current, +
TOWNSEND'S SOLITAIRE	Fort Walsh, 1
VARIED THRUSH	Gardiner Dam, 1; Yorkton, 1
BLACK-HEADED GROSBEAK	Moose Jaw, 1
AMERICAN TREE SPARROW	Big Muddy Lake, 8; Fort Walsh, 4; Glentworth, 3; Grasslands National Park, 1; Raymore, 1 Saskatoon, 1; Skull Creek, 15; Weyburn, 1
SAVANNAH SPARROW	Saskatoon, 1
FOX SPARROW	Saskatoon, 1
SONG SPARROW	Fort Walsh, 2
WHITE-THROATED SPARROW	Saskatoon, 3; Spalding, 1; Spinney Hill, 1; Weyburn, 1
WHITE-CROWNED SPARROW	Weyburn, 1
HARRIS' SPARROW	Indian Head, 1; Weyburn, 1
DARK-EYED JUNCO (Oregon)	Indian Head, +; Regina, 1
DARK-EYED JUNCO (Pink-sided)	Regina, 1
LAPLAND LONGSPUR	Big Muddy L., 26; Bromhead, 33; Glentworth, 365; Govenlock, 465; Grasslands National Park, 42; Weyburn, 458
CHESTNUT-COL. LONGSPUR	Govenlock, 1
RED-WINGED BLACKBIRD	Biggar, 1; Big Muddy Lake, 1; Fort Walsh, 5; Glentworth, 3; Grasslands National Park, 37; Last Mountain Lake W.M.U., 1
BREWER'S BLACKBIRD	Biggar, 1; Grasslands National Park, 2; Hepburn, 1;Last Mountain L. W.M.U., 1; Love-Torch River, 2; Regina, 1; Swift Current, 6; Warman, 1
COMMON GRACKLE	Grasslands National Park, 1; Kamsack, 1; Regina, 11; Weyburn, 1
BROWN-HEADED COWBIRD	Glentworth, 1; Grasslands National Park, 2
ROSY FINCH	Glentworth, 7; Meadow Lake, 2; Skull Creek, 38
PURPLE FINCH	Kamsack, 18; MacDowall, +; Round L., +; Swift Current, 3; Weyburn, 2; White Bear L., 10
RED CROSSBILL	Ft. Walsh, 67; Livelong, +; Saskatoon, 5; Squaw Rapids, 3; Swift Current, +

Table 5. BIRDS NOT IDENTIFIED TO SPECIES

SPECIES	LOCATION AND NUMBER
EAGLE species	Swift Current, +
WOODPECKER species	Armit, 3; Clark's Crossing, 1; Squaw Rapids, 1
REDPOLL species	Biggar, 15; Craven, 8; Fort Walsh, 24; Govenlock, 2; Regina, 2; Squaw Rapids, 38
CROSSBILL species	Fort Walsh, 20; Saskatoon, 7

Table 6. SUMMARY OF NEW OR TYING HIGH COUNTS ESTABLISHED DURING THE 1991 COUNTS (tying counts regular type; boldface indicates a new record).

LOCATION	1991 COUNT	SPECIES	PREVIOUS HIGH	LOCATION AND YEAR
Squaw Rapids	1	Common Loon	1	Gardiner Dam (82-84); Grand Centre -Pierceland (87); Squaw Rapids (89)
Gardiner Dam	**1**	**Yellow-billed Loon**		**NEW**
Love-Torch River	2	Am. White Pelican	2	Regina (59)
Fort Qu'Appelle	1	Harlequin Duck	1	Gardiner Dam (90)
Grayson	**2**	**Turkey Vulture**	**1**	**Fort Walsh (84); Edam (90)**
Indian Head	1	Cooper's Hawk	1	8 counts north to N. Battleford
Crooked River	1	Peregrine Falcon	1	17 counts N to Squaw Rapids - Carrot R.
Armit; Crooked R.	**4**	**Northern Hawk Owl**	**2**	**Masefield (66); Battleford-N. Battleford (77); Squaw Rapids-Sipanok (79)**
Choiceland-Gronlid	1	Boreal Owl	1	18 counts s. to Indian Head
Kamsack	1	Northern Saw-whet Owl	1	33 counts n. to Maidstone Bridge
White Bear Lake	**1**	**Red-headed Woodpecker**		**NEW**
Saskatoon	**37**	**Downy Woodpecker**	**32**	**Saskatoon (90)**
Saskatoon	**36**	**Hairy Woodpecker**	**28**	**Saskatoon (90)**
Saskatoon	**86**	**Blue Jay**	**66**	**Togo (77)**
Hudson Bay	**261**	**Common Raven**	**205**	**Prince Albert (89)**
Saskatoon	**390**	**Black-capped Chickadee**	**285**	**Saskatoon (90)**
Gardiner Dam	1	Varied Thrush	1	5 counts n. to Pierce Lake
Fort Walsh	6	Northern Shrike	6	Saskatoon (63); Pike Lale (69); Ft. Walsh (89, 90)
Moose Jaw	**1**	**Black-headed Grosbeak**		**NEW**
Saskatoon	1	Fox Sparrow	1	Moose Jaw (85); Biggar (87)
Saskatoon	**1**	**Savannah Sparrow**		**NEW**
Fort Walsh	2	Song Sparrow	2	Ft. Qu'Appelle (88); Ft. Walsh (90)
Weyburn	1	White-crowned Sparrow	1	Saskatoon (74); Fort Walsh (80); Broadview (86)
Govenlock	**1**	**Chestnut-collared Longspur**		**NEW**
Grasslands N.P.	**37**	**Red-winged Blackbird**	**30**	**Estevan (62)**
White Bear	3	Western Meadowlark	3	Skull Creek (71)
Regina	**11**	**Common Grackle**	**3**	**Regina (67); Weyburn (87)**
Kamsack	**18**	**Purple Finch**	**14**	**Saskatoon (69)**

RED-BELLIED WOODPECKER AT COLEVILLE, SASKATCHEWAN

BETH and GORDON DALES, Box 221, Coleville, Saskatchewan. S0L 0K0

The normal visitors to our bird feeder behind our home in Coleville are House Sparrows and Black-capped Chickadees. We have fed these two faithful species for years, but 1990 proved to be different.

One morning in mid-November 1990 after a heavy snowfall, we were surprised to look out our kitchen window to discover a Blue Jay at our feeder. Next came a Snow Bunting. He seemed to fit in with the sparrows but was more interesting to watch.

A few days later a woodpecker arrived. It was different from any we had ever seen. Upon looking it up in the bird book, it was clearly a Red-bellied Woodpecker.

We phoned our birder friend, Jean Harrows, who lives 12 mi. from Coleville and ten mi. north of Kindersley. She confirmed that from the description that bird could only be a Red-bellied Woodpecker, far beyond its normal range. Jean listed this unusual woodpecker as a footnote to her 1990 Christmas bird count report, though Coleville is just outside of her area. At that time the confirmatory photographs had not been developed. Since the woodpecker had not been seen during a regular count, it was not included in the summary compiled by Wayne Harris.

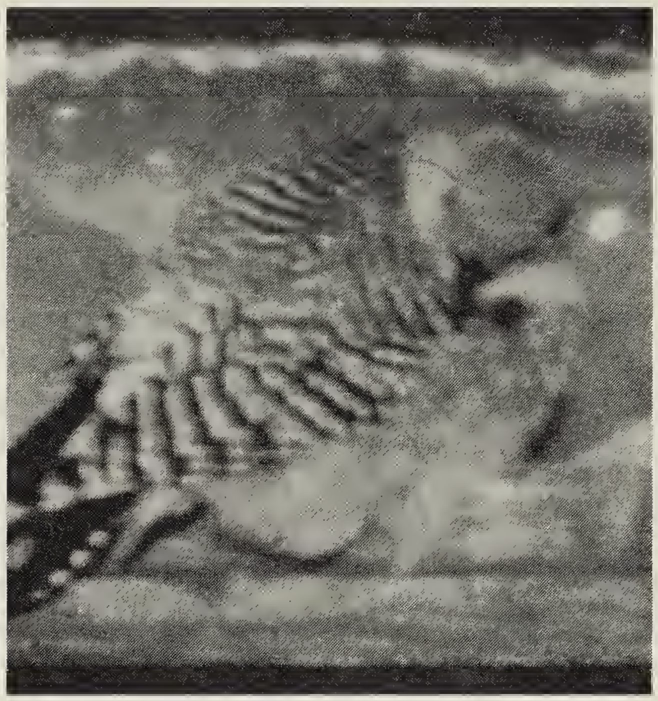
We have a frost shield installed on our kitchen window to allow a clear view of the feeder. The woodpecker would take the sunflower seeds from the feeder and the pumpkin seeds from the compost and cache them for future use in the bark of the trees in the yard. He chose the sunny side of the trees, in the shelter of a building. He also enjoyed the suet that was available.

The feeder food was mainly a commercial mix of cracked corn, sunflowers and various seeds. We added some canary seed and screenings obtained from a farmer to cut costs, as we were feeding twenty pounds of food per week.

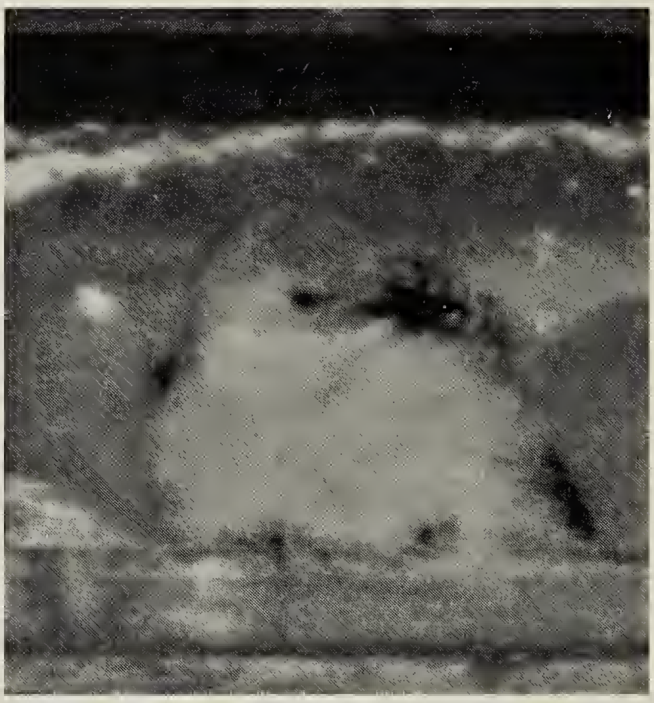
The order of feeding at our station was fun to watch. The ever-hungry sparrows would back off when the jay appeared. However, when the woodpecker arrived, he “rushed the roost” and the jay left. The sparrows would stay close by and tease him. The woodpecker would hiss and stand his ground.

One day the woodpecker sat on the feeder, preening in the sun, and guarding the feeder for about an hour. As we had not yet filled it that morning, he was making sure he had his daily ration. We chose that opportunity to take his photograph.

Our photographs were taken with



Red-bellied Woodpecker. *Beth Dales*



Red-bellied Woodpecker. *Beth Dales*

a 200 mm lens, plus a 2x converter, through two panes of glass and the frost shield. We met Dr. Stuart Houston this summer and loaned him the transparencies, from which he made the prints shown above.

January 1991 brought a very cold snap and blizzard. Although they had been daily visitors until then, the woodpecker and the Snow Bunting did not come to us again. Both continued to be seen at two other feeding stations in Coleville until the end of February, for a total stay of over three months. The jay visited our feeder until early May.

It may be years before we have such an interesting visitor again. Up to November 1991, we have only had a late robin, on his way south through the snow.

***

Now when I had mastered the language of the water, and had come to know every trifling feature that bordered the great [Mississippi] river as familiarly as I knew the letters of the alphabet, I made a valuable acquisition. But I had lost something, too. I had lost something which could never be restored to me while I lived. All the grace, the beauty, the poetry, had gone out of the majestic river. *Mark Twain, 1883. Life on the Mississippi.*

BRAMBLING: A EURASIAN VISITOR TO SASKATCHEWAN

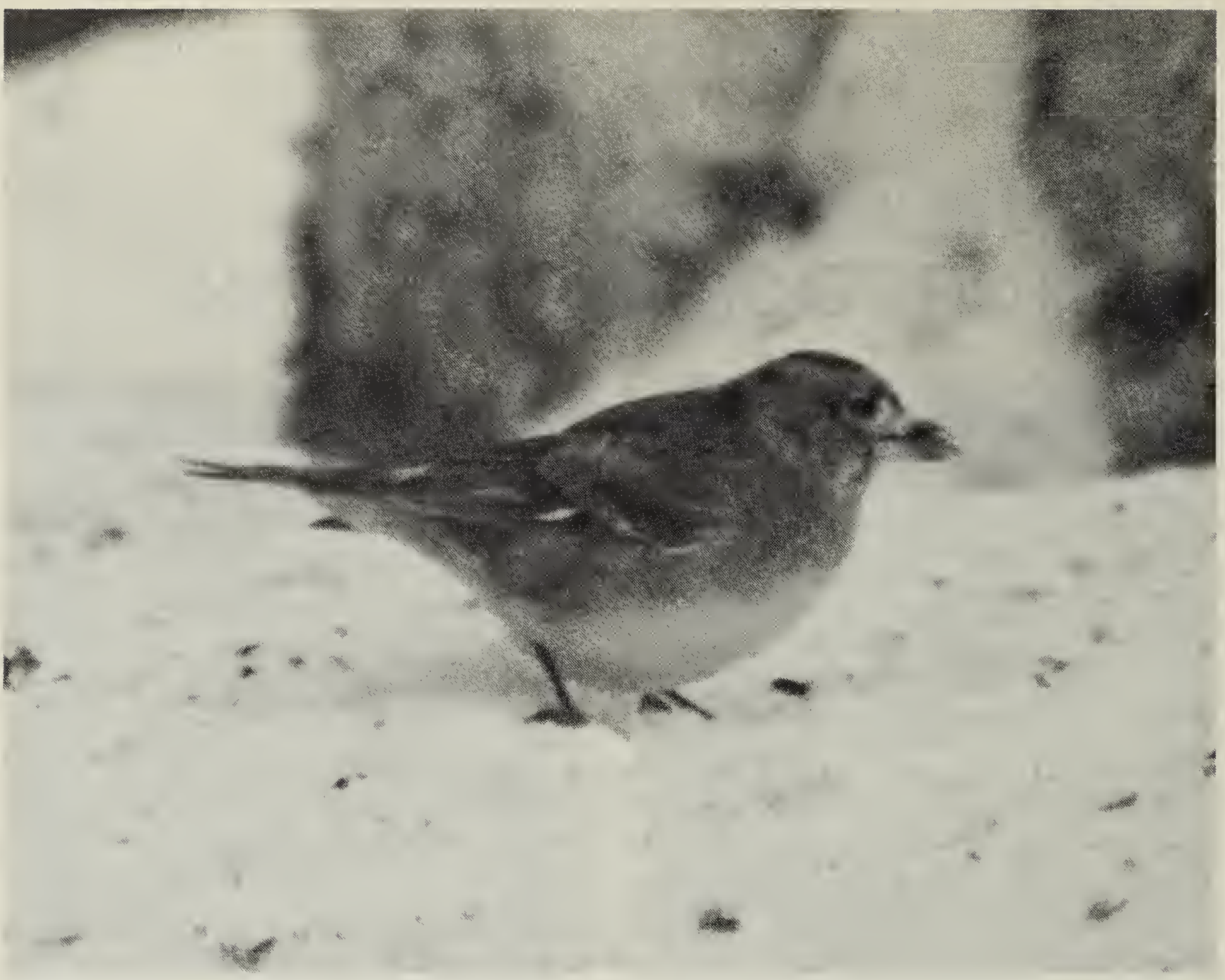
HELEN FAST, 146 Columbia Drive, Saskatoon, Saskatchewan. S7K 1E9

October's inclement weather had a bonus for Saskatoon birders. On 31 October, at 1:30 p.m., I was sitting in my family room watching the birds at my various feeders, when a brightly coloured bird caught my attention. The small finch-like bird ate birch seeds on the snow, then flew to the table feeder to eat small sunflower seeds. I did not recognize the bird, so I consulted various field guides. Finally, on the last page of the National Geographic's *Birds of North America* I spotted a male Brambling (*Fringilla montifringilla*) in fall plumage. The field markings were all the same. The fact that the sketch was not accompanied by a range map shook my confidence somewhat. The Brambling was patterned in shades of orange, grey, black, buff and white. It had a bright burnt orange breast and shoulders, with black and white wing bars, and a white belly with faint black spotting on the flank. The white rump was evident while the bird flew or fed. It also had two slightly broken black bars extending from the crown to the neck, remnants of the black summer plumage pattern. The bill was pale yellow with a dark tip. Its size was approximately 15 cm, similar to the chunkier Dark-eyed Junco feeding nearby.

This small finch is a native northern Eurasian species, and is an uncommon spring and fall migrant to Alaska, but exceedingly rare elsewhere. It occasionally summers in the Aleutians, but regularly reaches Siberia, and winters in Britain, Europe, Asia and Japan.

My telephone calls to several birding friends were met with some scepticism, because it seems there have been no previous records of Bramblings in Saskatchewan. The Brambling would feed for five to six minutes at a time; however, it chose to stay away about three-quarters of an hour when the first birders arrived to verify my identification. Michael Williams, Ramona Harms, and Burke Korol were the first of more than 70 birders to see and enjoy this very cooperative Halloween visitor. The Brambling's pattern of feeding was consistent during the six-day stay; it was active in the mornings and came less frequently in the afternoons. It became aggressive when sparrows or juncos came too close.

This little bird became a national celebrity when our local television station, CFQC-TV, and Carol Blenkin brought a crew to film the bird. They interviewed Mary Gilliland, President of the Canadian Nature Federation, and some of the many birds watchers who had come to enjoy the Brambling. The local news carried the story several times; and on 1 November national television coverage was a delightful surprise



Male Brambling. *Helen Fast*

for Canadian bird watchers across the country.

It was ironic, indeed, that, last March, on a visit to my son in Japan, I missed the Brambling in its natural habitat; yet, six months later, this Eurasian visitor, obviously off course by half a planet, should appear in my back yard in Saskatoon.

***

At the present moment Ina is, as usual, resting – though I don't know from what – in a little cup which her body exactly fits. Her body long ago assumed perfectly the shape of a toad, which is a shape not without dignity and charm if one is broad-minded enough to accept it. She measures well over an inch from the tip of her nose to the place where her tail would be had she cared to keep it. And since the tadpole from which she developed was only one-fifth of an inch, exclusively of tail, I calculate that she has increased her weight one hundred and twenty-five fold; which is as though a human body were to reach eight hundred pounds in a similar period. *J.W. Krutch, 1952. The Desert Year. William Sloane.*

OBSERVATIONS OF THE OSPREY

JEAN BANCROFT, 306-200 Tuxedo Blvd., Winnipeg, Manitoba. R3P 0R3

On 25 and 26 May 1990, at Grand Marais (on the south basin of Lake Winnipeg) I observed my first Osprey nest. It was atop an outside pole of a hydro substation (see photo) and was about 12 m (40 ft.) from the ground. The nest was at least 1 m (3 ft.) in diameter. Frequently Ospreys nest in a small group or scattered colonies, but this particular nest appeared to be the only one in this entire lakeside area.[5,6]

The hydro substation is located near a main road with a cutoff, and cars are not permitted to park too close to the nest site. This is the third year that the same nest has been occupied. Some Osprey nests have been known to last 30 to 40 years.[2] Contrary to some previous reports, the sitting female seemed to be very sensitive to humans and I understand that the R.C.M.P. stationed nearby keep a close watch to see that the nest is not disturbed.[3]

On a later visit, 22 June, I noticed that only the head and neck of the female could be seen above the nest. Incubation by the female of the two to four eggs takes anywhere from 28 to 33 days.[2,4] The morning of 23 June I observed the male fly from the top of a tall "perching" tree which was located in a spruce and tamarack stand several hundred feet behind the nest site. He had a piece of fish in his talons. The Osprey lives on fish, hence the name "fish hawk."[2,4] As he circled above (and not far from the nest) there were many loud calls from the female. I was quite surprised to see a pair of Eastern Kingbirds try to attack the male, but the Osprey made no attempt to attack the kingbirds. Later that day I observed the male fly to the nest with another piece of fish and the female ate it.

Before noon 24 June I noticed the male perched on the edge of the nest; the female was sitting restlessly. Bent mentions that the male feeds the female bits of fish at the nest while she is incubating but "she sometimes leaves the nest for exercise or to fish for herself."[2] The young do not fledge until they are eight weeks old but at five or six weeks they can feed themselves with the fish dropped into the nest.[2]

As the Osprey is not a deep diver, it catches fish which are close to the surface.[2] In Fort Myers, Florida, February 1983, I observed an Osprey hovering 15 m (50 ft.) above a lagoon, plunge downward in a spectacular manner, with half-closed wings to catch a fish in its powerful claws.[1] The fish was carried head first, as is the usual manner.[4] As this species has keen eyes, when in flight it can locate a fish from a height of 330 to 660 m (100 to 200 ft.).[2]

On 16 July a resident at Grand Marais informed me there were two young ones; on 12 August it was noted there were three young being

Osprey nest on power pole. *Ernie Taylor*

fed by the female. On 26 August the same resident observed the Osprey family flying above the lake, not far from the cottages.

On 25 May 1991, I visited this same nesting site and noticed that the female Osprey was sitting. The male was perched about 13 m (45 ft.) away on one of the hydro poles which was part of the substation. The next day I observed the female fly off the nest and circle above the nesting area; her vociferous calls ended with a shrill angry scream. She then flew back on the nest; there was no sign of the male at that time.

It is believed that the Osprey mates for life.[2] As this is the fourth successive year this nest has been occupied, it is probably the same pair which have been returning.

The North American race of the Osprey winters from southern United States south to the West Indies, northern Argentina, Paraguay and Peru.[4] I am looking forward with great anticipation to the return of the Ospreys to the Grand Marais nesting site for the season of 1992.

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FALL FOOD OF THE EASTERN SCREECH-OWL IN MANITOBA

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The Eastern Screech-owl is one of the most widespread owls in North America.[4] It ranges from the Gulf of Mexico north to southern Manitoba, and from Montana to the east coast of the United States.[14] This small (20-24 cm) highly nocturnal owl has a diet that is quite varied over its range and throughout the season.[1,4,5,11,12,15,16,18] Several studies of the Eastern Screech-owl's diet have been published, but none from the northern edge of its range.[5,15,16,18] Reports of Eastern Screech-owls in Manitoba occur as far north as Riding Mountain National Park.[1]

This study was done near Winnipeg in autumn, a time when numbers and types of prey available are changing.[7,13,16] The study area was in La Barriere Park along the La Salle River, just south of Winnipeg. The vegetative cover consisted primarily of Manitoba Maple (*Acer negundo*), Green Ash (*Fraxinus pennsylvanicus*), Bur Oak (*Quercus macrocarpa*) and Red Osier Dogwood (*Cornus stolonifera*). The land outside the wooded area is agricultural prairie, creating an ecotone. All prey remains were collected from and around Wood Duck nest boxes from La Barriere Park where a resident Eastern Screech-owl was seen. As Eastern Screech-owls are cavity nesters, Wood Duck nest boxes are a readily accessible nest and roost site. Through examination of the prey remains, an owl's diet can be accurately quantified.[6,8]

Starting 13 October 1990, 40 nest boxes were checked for prey remains. Five of these contained pellets and/or bones and feathers, presumably the prey of the resident screech-owl. These five boxes, and the surrounding areas, were checked once a week from 13 October to 4 November 1990.

Prey were identified to species when possible. Mean individual prey weight was estimated by taking the average weight of five individuals of each species from the same time of year, based on data from Manitoba specimen collections.[9] From these individual prey weights a percent total weight was calculated for the prey species (Table 1).

A total of 26 individual prey items were identified from 17 pellets and prey remains. Thirteen of these were mammals: Meadow voles (*Microtus pennsylvanicus*), Deer Mice (*Peromyscus maniculatus*), Red-backed Voles (*Clethrionomys gapperi*) and unidentified small rodents (Table 1).

Variation in the number of species and weights of birds found in the prey remains was much greater than that in mammals (Table 1). The

Table 1: Prey Remains of Eastern Screech-owl Pellets.

Prey items	# Individuals	% Total Prey	Mean Weight (g)	% Biomass
Mammals				
Meadow Vole	3	11.5	74.7	10.7
Deer Mouse	2	7.7	32.0	4.6
Red-backed Vole	3	11.5	54.6	7.8
Unidentified small mammals	5	19.2		
Total	13	49.9		23.1
Birds				
Northern Flicker	2	7.7	252.0	36.1
White-breasted Nuthatch	2	7.7	45.4	6.5
Purple Finch	2	7.7	51.0	7.3
Bohemian Waxwing	1	3.8	60.2	8.6
Rose-breasted Grosbeak	1	3.8	43.6	6.2
American Robin	1	3.8	85.6	12.3
Unidentified passerines	4	15.4		
Total	13	49.9		77.0

Northern Flicker only represented 7.1% of the total prey but, with an estimated mean weight of 126.0 grams, it accounted for 31.6% of the total biomass. White-breasted Nuthatches and Purple Finches each constituted 7.7% of the total prey and 6.5% and 7.3% of the weights, respectively. The Bohemian Waxwing, Rose-breasted Grosbeak and American Robin each accounted for 3.8% of the total prey and 8.6%, 6.2% and 12.3% of the total biomass, respectively.

The Eastern Screech-owl has a highly variable diet, perhaps due to its opportunistic nature, taking whatever prey is available.[2,4,5,10,16,18] The highly diverse diet of the Eastern Screech-owl has been documented in more southerly reaches of its range. Small mammals (shrews, flying squirrels, chipmunks and bats), birds as large as Ruffed Grouse, amphibians, reptiles, invertebrates and, oddly enough, fish are all included in the diet of Eastern Screech-owls.[2,3,4,15,17] There are even reports of cannibalism occurring in this species.[4] At least nine species of prey in this small sample demonstrate the highly variable diet as well as the opportunistic nature of the Eastern Screech-owl.

Acknowledgements

I would like to thank Spencer Sealy for the use of his avian collection and for help in identifying prey remains; W.O. Pruitt for access to his mammalian collection; Glen McMaster for field assistance; and Jim Duncan for a critical review of this paper.

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Flowers stir our sense of beauty and lend a special charm to botanizing, whether in our gardens caring for roses and sweet peas or rambling in nature's paradise searching for rarer blooms. Flowering plants evolved along with our mammal ancestors; we grew up together during the last few hundred million years, and the roots of the attraction we feel for fragrant blossoms and bouquets lie deep within us. *Stan Rowe, 1990. Home Place: Essays on Ecology. NeWest, Edmonton.*

DOMESTIC-NATIVE GOOSE RELATIONSHIP

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During the spring of 1988, our domestic, brown Chinese-Toulouse gander lost his mate. It so happened that a female Canada Goose, nesting in a basket nest by a dam next to the farm yard, also lost her mate. The female hatched five goslings, and the domestic gander soon joined her in protecting the young. They stayed around the pond by the yard for a few days, then the gander moved, along with his adopted family, to a larger dam located in a coulee 1.2 km (0.75 mi.) away. In early August, the wild geese were able to fly, and soon left for the south. Our tame gander, unable to join them in flight, came walking home alone.

In the spring of 1989, a female Canada Goose came back to the same nest, but this time a wild gander was with her. Nevertheless, when the young hatched, the tame gander joined the family and all three adults got along very well.

An unusual incident occurred one day which illustrates our goose's involvement with the wild family. A group of bird banders had stopped by and when we came upon these geese some distance from the water, the banders decided to take the opportunity to band the flightless young. As they approached, the parent Canadas immediately took flight. But the domestic gander defended the young, attacking the banders with such ferocity that they were almost forced to give up. However, the five young were successfully banded and later that winter I received word that one had been shot in Nebraska.

The spring of 1990 was a repeat of 1989, with the domestic gander spending the summer at the big dam with an adopted family of Canada Geese.

The next year, 1991, was much the same, except this time only two eggs hatched. The two goslings looked very much alike until they were about half grown, when we noticed one had orange legs and bill, like the domestic goose, instead of the black legs and bill that a Canada Goose normally has. Later, as it got its feathers, they were light grey, again like the domestic gander, but with the white cheek patch characteristic of the Canada Goose. So, clearly, this youngster was a hybrid.

This family left the area earlier than most of the wild geese, but as soon as they were gone, the domestic gander walked home to rejoin the barnyard flock.

Canada Goose nest. *Daisy D. Meyers*

By 1840 the westward movement was confronted with the true prairies of what came to be known as the Middle West. ... The pioneers hesitated on the edge of the large prairies with their seemingly endless expanse of thick grass. There was a sense of vastness about them that seemed overpowering, an impression of greatness that could not be subdued. Indeed, some contended that they would not be brought under cultivation for centuries. *E.E. Edwards, 1948. Grass: The Yearbook of Agriculture. Washington.*

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There are only two dimensions on the plains, time and distance, but they add up to forever. Thin the grass and cut the rainfall in half and the plains become desert, which has still a third dimension, patience. The plains persist. The desert waits. *Hal Borland, 1965. Our Natural World. Doubleday, NY.*

THE STATUS AND DISTRIBUTION OF THE COMMON POORWILL IN THE CYPRESS HILLS, SASKATCHEWAN

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Common Poorwills are nocturnally active, insectivorous birds. They are best known for their physiological ability to enter torpor and their alleged ability to hibernate.[2,3,8] Common Poorwills (henceforth poorwills) are known from only two restricted localities in Canada, both of which represent the northern limit of their ranges.[7] Very little is known about their habitat requirements, population status, or reproductive biology at either of these locations. One population is centred in the Okanagan Valley of south-central British Columbia.[5] This is the only Canadian population for which there is more than one breeding record.[6] The second locale is the Cypress Hills and the Great Sand Hills regions of southwestern Saskatchewan.[7]

The Cypress Hills, a geological and topographical plant and animal refuge, lie isolated on the Canadian prairies.[11] Cypress Hills Provincial Park in Saskatchewan (Figure 1; henceforth the park will be referred to as Cypress Hills) consists of two distinct geographical units, Centre Block and West Block. There are a total of 25 records for poorwills in the Cypress Hills and the lower Frenchman River Valley.[13] There is one confirmed breeding record in the West Block, however, to our knowledge there has been no rigorous attempt to determine the status of poorwills in this region. The purpose of our study was to determine if poorwills were resident within the West Block and, if present, to evaluate distribution, population size, reproductive status and habitat use.

METHODS

Population Size The study was conducted in the West block from 22 May through 3 September 1991. We also made brief surveys of the Centre Block (on two nights), the Great Sand Hills (one night), and the Frenchman River Valley near Eastend (one night; Figure 1).

Since caprimulgids respond to song playbacks, an estimate of population size can be made by listening for response along transects through representative habitats.[9,10] During the study period we played tapes of recorded poorwill calls along 16 transects (total distance of 71 km) on a total of 49 nights (Table 1, Figure 2). Playbacks were conducted at 300 m intervals along each transect in a manner similar to Kepler and

Kepler's census of whip-poor-wills.[9] Transects mostly followed gravel roads and dirt trails, however, we also walked to some areas not accessible by road. Censusing efforts were concentrated during periods with moonlight since poorwills are most active at dusk, dawn and during periods with lunar light.[4]

Orr, Aldrich and limited data from the British Columbia population (R. M. Brigham, unpub. data) suggest that poorwills mate monogamously.[1,12] Assuming that only males call and that all males acquire a mate, an estimate of the total population can be made by doubling the number of males heard calling.

Reproductive Status We attempted to capture poorwills at four sites (Figure 2). Mist nets (6-15 m long) were erected shortly before sunset and playbacks were used to lure the birds. Nets were usually left open for two to three hours per night (14 nights in total), although on moonlit nights they were left up longer. Radio transmitters (Holohil Systems Inc.) were affixed in a back pack arrangement on two captured individuals.[3]

Birds carrying transmitters were located on a regular basis during the daytime (usually every second day) to find nest sites and to determine where non-nesting or incubating individuals roosted. Nocturnal tracking of foraging birds was done at irregular intervals between periods of censusing and trapping.

Habitat Use We assessed habitat use from direct observations, the locations of calling birds, and tracking data from foraging or roosting birds.

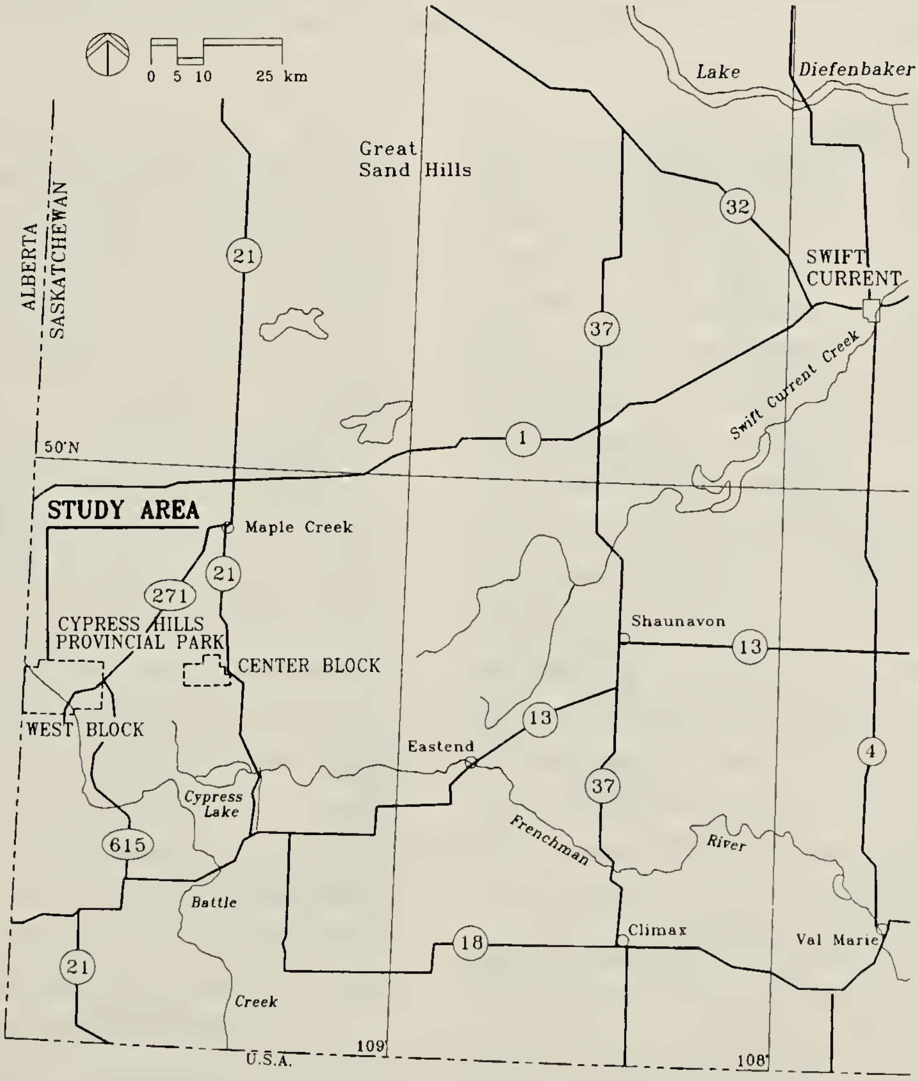


Figure 1. Regional context of study area.

RESULTS

Population Size During the 49 survey nights, 55 poorwills responded to our playbacks and 24 were seen (Table 1). The first was heard on 27 May (11 days after the first was heard in the Okanagan Valley). A conservative estimate of the number of male poorwills was made by using the count from the night with the highest number of responses from, or sightings of, different individuals along each transect (Table 1). In general, calls within 100 m of each other were considered to be one bird. Calling clusters more than 250 m apart were interpreted as different birds. Using these criteria, we estimate that a minimum of 30 male poorwills were resident in the West Block during 1991. Assuming that each male acquired a mate, the minimum number of poorwills in the area we surveyed was 60.

Poorwills ceased calling in the West Block in mid- to late July. This includes unsolicited calling as well as calling in response to our playbacks. We know this to be the case since the radio-tagged birds, whose location was known, did not respond to playbacks after this time.

There were no responses to our playbacks in the Centre Block, however one bird responded in the Frenchman River Valley and two responded in the Great Sand Hills.

Reproductive Status We caught one male and one female poorwill and outfitted each with a transmitter (Table 2). We located their "nest" and clutch of two eggs. The eggs hatched on 22 and 23 July and the chicks were checked periodically

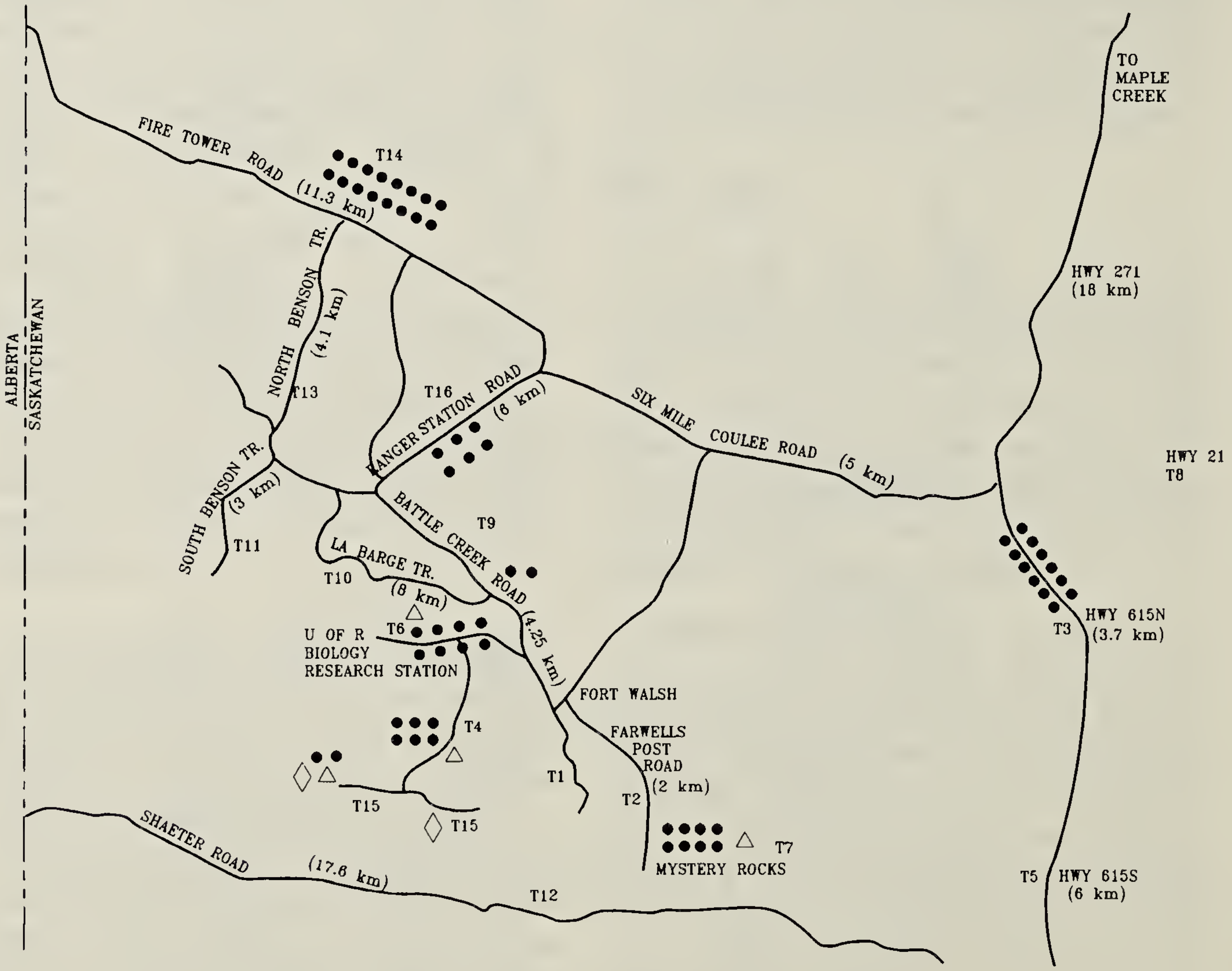
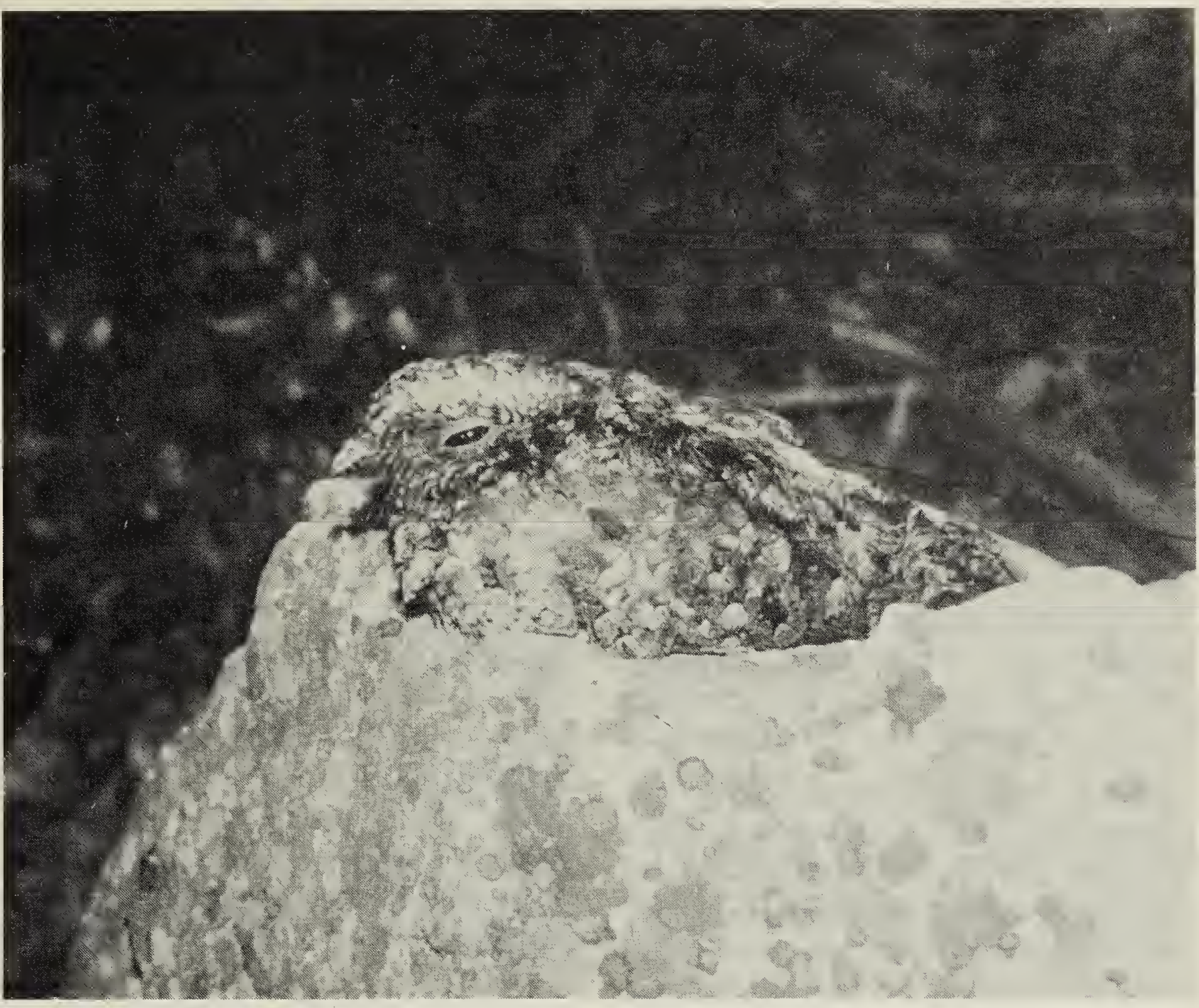


Figure 2. Poorwills sighted/heard Cypress Hills Provincial Park — West Block.



Male poorwill roosting on a rock near Vaseaux Lake, B.C. *Mark Brigham*

(approximately every three days). They disappeared between noon on 1 and noon on 2 August. At that time, the oldest chick was only ten days old and not able to fly. We assume the nestlings were preyed upon. Interestingly, on 1 August, the first egg of a new clutch was laid. A second egg was laid on 2 August. Direct observations and tracking data indicated that the male and female shared incubating and brooding duties during both breeding attempts. The first chick in the second clutch hatched on 21 August and the second on 22 August and they were both healthy and growing at the end of our study on 3 September. The tagged adult birds departed from the area on 22 September, however we do not know the fate of the young.

Habitat Use The vegetation pattern of West Block consists of open side hills, dominated by Timber Oat Grass (*Danthonia intermedia*), Club Moss (*Selagenella densa*) and Creeping Juniper (*Juniperus horizantalis*). Intermixed are stands of Lodgepole Pine (*Pinus contorta*), White Spruce (*Picea glauca*) and Trembling Aspen (*Populus tremuloides*). Tracking suggests that foraging by poorwills occurred over these side hills, which approach 1300 m in elevation, and over gravel roads and dirt trails. Poorwill activity was not restricted to the side hills, however, as birds frequently roosted on low branches of dead trees at the forest edge and also foraged along forest edges.

The distribution of poorwills appears clumped (Figure 2). This merely reflects the fact that the poorwill activity was restricted to open side hills and forest edges.

Table 1: Calling Data by Transect

Transect Number	Transect Name	Transect Length (km)	Number Calling Nights	Dates	Birds Heard	Birds Seen	Minimum Number Males
1	south of Fort Walsh	0.5	1	23 May	0	0	0
2	Farwell's Post	2.0	2	26, 30 May	0	0	0
3	Hwy 615 n	3.7	5	27, 29, 31 May 2, 5 June	8	0	6
4	sw of station	0.5	10	28, 30 May 1, 6, 7, 11, 14, 24, 26 June 21 July	15	7	3
5	Hwy 615 s	6.0	5	27, 29, 31 May 23, 25 June	0	0	0
6	Station	0.5	8	1, 10, 14, 17, 24, 25 June 3, 5 July	12	2	4
7	Mystery Rocks	0.5	2	9, 13 June	7	1	4
8	Hwy 21	2.5	1	8 June	0	0	0
9	Battle Creek Rd.	4.25	1	12 June	1	0	1
10	La Barge Trail	8.0	1	15 June	0	0	0
11	South Benson Trail	3.0	1	16 June	0	0	0
12	Shaefer Road	17.6	1	18 June	0	0	0
13	North Benson Trail	4.1	2	17, 19 June	0	0	0
14	Fire Tower Road	11.3	1	28 July	8	1	8
15	sw corner U of R property	0.5	4	6,15 June 16, 25 July	3	6	1
16	Ranger Station Road	6.0	5	12 June 2, 7, 8, 9 July	5	6	3
Total							30

Table 2: Summary of Data for Captured Poorwills.

The latitude and longitude coordinates are from topographical map 72F/12.

Date	Place	Sex	USFWS Band Number	Mass (g)
05/07/91	49°34'02"N 109°53'50"W	male	891-29902	44.0
15/07/91	49°34'02"N 109°53'50"W	female	891-29903	54.0

DISCUSSION

Population Size From playbacks, we conservatively estimate that a minimum of 30 male or 60 poorwills were resident in the West Block. This estimate represents a conservative figure since some of the locations where poorwills may have been present were not surveyed due to their inaccessibility. Also, the number of birds heard calling is dependent upon climatic factors. Rain, wind, etc., impair the ability to hear calling birds and it is possible that inclement weather may result in reduced vocalization on the part of the birds.

Calling by poorwills stopped in mid-July for unknown reasons. This behaviour contrasts that of the Okanagan population, where birds continue to call (unsolicited) throughout the summer and into the fall (R.M. Brigham, unpub. data). The lack of calling by birds in the Cypress Hills population may have contributed to previous observers concluding that the Cypress Hills population was sporadic in occurrence.[13] Poorwill calling appears to be dependent on season (most intense in late spring/early summer; least intense in mid- to late summer).

Reproductive Status The two nests we found are the second and third records for this species in the Cypress Hills and in Saskatchewan.[14] The fact that the only pair we radio-tagged was reproductively active suggests that much of the population is. Assuming that the tagged pair was typical, birds in the Cypress Hills make two nesting attempts, the same as in the Okanagan.

Although both Canadian populations of poorwills occur at the northern limit of their range, the Cypress Hills is an area with a more continental climate than the Okanagan Valley. This is likely reflected in the later arrival (approximately two weeks in 1991) of poorwills in the Cypress Hills. Future work is needed to address the question of whether climatic differences influence the use of torpor in the two areas.

Habitat Use Unlike the Okanagan, foraging poorwills were regularly found near or tracked to forest edges rather than just open grassy areas. Further, poorwills in the Cypress Hills appear to roost/nest in areas with more ground cover and longer grass than in British Columbia.

Poorwills do not appear to be restricted by the elevation of potential habitats. The Okanagan Valley population is centred at elevations approaching 500 and 1000 m a.s.l.[3] In contrast, poorwills in the Cypress Hills population were regularly heard at elevations approaching 1300 m (e.g., individuals along the Fire Tower road: Figure 2), which is close to the highest point of the Cypress Hills in Saskatchewan.

In conclusion, we found evidence of a significant population of poorwills in the West Block of the Cypress Hills. The degree of reproductive success and whether this population is stable over time remain to be determined.

Acknowledgements

We thank all of the landowners in the West Block who allowed access to their property; especially the Hansons and Blacks and the staff at the Fort Walsh National Historic Site. We gratefully acknowledge the Biology Department, University of Regina, for the use of the field station and Drs. D. and M. Sauchyn for the observations of 22 September. This study was funded by Saskatchewan Environment and Public Safety through the Environmental Youth Corps program; grants from the Saskatchewan Natural History Society, the University of Regina's President's Natural Sciences and Engineering Research Council (NSERC) fund, and an NSERC operating grant to R. M. Brigham.

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CROWS SAY *CAW*

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I enjoyed Victor Friesen's attempt to re-interpret the sound of the common crow.[2] To his ear it sounded like *aw*, rather than *caw*. It may be that his auditory perception is culturally biased.

A quick look at the audio-spectrograph of the crow, shown in the field guide *Birds of North America* by Robbins, among others, reveals that the crow does in fact utter something like *caw*.[3] The sharp onset of the audio signal is the non-stressed consonant *k* and the subsequent inflection is the *aw*. *Caw* is not a bad catchphrase for this sound. The perceptual problem is partly a cultural one; in this case, based on the lack of "voiceless" consonants in our language and our limited alphabetic representation of such sounds. The "voiceless velar stop k," to use the jargon of language students, is a common attribute of the languages of many aboriginal peoples such as the Inuit. In this respect and others related to their language, these people may have a "better ear" for animal sounds than we do.

Several years ago, in response to reviews of bird field guide books in the *Blue Jay*, I commented on the value of sonagrams for birders.[1] I felt that reviewers of bird field guides had overlooked or downplayed this unique feature of the Robbins' field guide. I empathized with one reviewer's point that sonagrams are "an interesting feature — for those who can read them." Although the unfamiliar format of sonagrams may be intimidating, with a little attention and practise they can extend our acoustic senses into an abstract form — like notes in sheet music. Sonagrams allow us to convert natural sounds into a two-dimensional format suitable for our visual senses.

Robbins' guide provides a concise introduction to the use of sonagrams and several clear examples of sounds to which we can relate. As an example, I used the sonagram of the Olive-sided Flycatcher and referred to its distinctive *Whip Three Beer* call. Later, I received a letter from a *Blue Jay* reader who said that he had never heard the *p* sound and suggested that the call should really be *Whee Three Beer*. The sonagram in Robbins' guide showed that he was correct. Then I began to look for other misrepresentations. There are many; for example, there is no indication of the *Q* in mallard's quack. But the crow definitely says *caw*, and in that, I feel somewhat vindicated.

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Editor's note: We could not publish the sonagrams because of coypright problems.

POSSIBLE BREEDING PAIR OF CINNAMON TEAL IN THE THICKWOOD HILLS, SASKATCHEWAN

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S7H 4N6

There is only one confirmed breeding record of Cinnamon Teal in Saskatchewan — at Nicolle Flats near Moose Jaw in 1990.[1] Additional records of possible breeders have been recorded, but many are confined to the southern and western portions of the province.[2] This note reports the probable breeding of Cinnamon Teal in central Saskatchewan.

In 1990 I saw a potential breeding pair of Cinnamon Teal in the Thickwood Hills, while I was conducting research on a Canadian Wildlife Service study for Dr. Glen Adams. The study site was in the Royal P.F.R.A. Pasture, located approximately 20 km north of Blaine Lake, Saskatchewan.

As part of the study, waterfowl breeding pair censuses were conducted from early May until late June. On 30 May, I observed a pair of Cinnamon Teal on a pond in the southwestern portion of the pasture. On subsequent breeding pair censuses, 8 and 14 June, a male Cinnamon Teal was observed on the pond adjacent to the one where the original pair was seen.

Although nest searches were conducted in this area, no nest was found. However, I believe that the initial pair observation and continued observation of the male represent a probable breeding pair of Cinnamon Teal in this area of the province.

1. KOES, R.F. and PETER TAYLOR. 1990. Prairie Provinces Region (Summer 1990). *Am. Birds* 44:1148-1149.
2. SMITH, A.R. and C.I.G. ADAM. An atlas of Saskatchewan birds. Canadian Wildlife Service and Saskatchewan Natural History Society, Regina. In press.

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As in fall, our geese make daily trips to corn.... If I could understand the thunderous debates that precede and follow these daily excursions to corn, I might soon learn the reason for the prairie bias. But I cannot, and I am well content that it should remain as a mystery. What a dull world if we knew all about geese. *Aldo Leopold. 1949. A Sand County Almanac. Oxford.*

SASKATCHEWAN CHRISTMAS MAMMAL COUNT — 1991

Compiled by WAYNE C. HARRIS, Box 414, Raymore, Saskatchewan. S0A 3J0

Interest in mammal counts increased this year after stabilizing for the past five years. The number of counts increased to 82 from 65 last year, exceeding the previous high of 70 set in 1987. Of the record 44 species (exceeding last year's 39), 3 were never before recorded on a Christmas Mammal Count. All of these new species are from the grasslands of the southwest, Black-tailed Prairie Dog, Sagebrush Vole and Swift Fox.

Hundreds of Black-tailed Prairie Dogs were seen on the Grasslands National Park count. The weather was unseasonably cold in October and November, but temperatures throughout early December were very warm with many days above freezing. This obviously prematurely ended the normal hibernation period. The Grasslands National Park and immediate vicinity is the only place in Canada where prairie dogs are found.

The first count record for the Sagebrush Vole was one found hanging on a barb wire fence (shrike kill?) on the Glentworth count. Although the population status and distribution of this species is not well defined, this is not an unexpected species for this area.

Both count areas that recorded the Swift Fox have been subject to re-introduction programs in recent years; these records are undoubtedly a result of this program. The Swift Fox was considered extirpated from the Canadian plains prior to the re-introduction.

Other species are infrequent enough to warrant mention. The Short-tailed Shrew at Squaw Rapids is only the second since the count began. Both the Lynx and the Woodland Caribou were reported for the second year in a row after a long absence from the count reports. In the case of the Lynx this appears to be a result of a population resurgence but the caribou is from northern counts; although there are several counts from the areas where they occurred in the past they remain unreported from the southern forest.

White-tailed Deer was still the most frequently recorded species, but numbers appear to be down as do numbers for Snowshoe Hare, White-tailed Jack Rabbit and Nuttall's Cottontail. Coyote and Red Fox numbers appear to be up; the Coyote was the second most common species.

For weather, coverage and participants please refer to the Christmas Bird Count found in this issue. Numbers appearing before the count location name in the tables refer to the location of the count on the map included with the bird count; the numbers are not consecutive because not all bird counts submit information on mammals. In the tables a numeral alone indicates that the animals were actually seen, while a letter prior to the number indicates that the numbers were inferred by the means defined below. A letter alone indicates that the species was present but it was either impossible to estimate numbers or no attempt was made to do so.

T = tracks
L = active lodge or hut
D = dead animal found
d = fresh diggings found
S = odour or smell
H = heard
+ = present during the count period (Dec. 14 to Jan. 2) but not found on count day.

Table 1-1. SASKATCHEWAN CHRISTMAS MAMMAL COUNTS

SPECIES / LOCATION & DATE	1. ABERNETHY 21 Dec. 1991	2. ARMIT 23 Dec. 1991	3. BANGOR 2 Jan. 1992	5. BETHUNE 15 Dec. 1991	6. BIGGAR 19 Dec. 1991	7. BIG MUDDY LAKE 30 Dec. 1991	8. BIG RIVER 28 Dec. 1991	9. BIRCH HILLS 21 Dec. 1991	10. BORDEN 1 Jan. 1992	11. BRIGHTWATER 22 Dec. 1991
MASKED SHREW		T1								
SHORT-TAILED SHREW										
SHREW species										
NUTTALL'S COTTONTAIL						T3				
SNOWSHOE HARE		T50	6		T2			T40	T	
WHITE-TAILED JACKRABBIT	7		+		T9			T1	1	
BLACK-TAILED PRAIRIE DOG										
13-LINED GROUND SQUIRREL										
RICHARDSON'S GR. SQUIRREL										
GREY SQUIRREL										
FOX SQUIRREL										
RED SQUIRREL	1	1	+					11		
NORTHERN FLYING SQUIRREL										
NORTHERN POCKET GOPHER										
BEAVER		D1	+					T1		
DEER MOUSE		T6								
GAPPER'S RED-BACKED VOLE										
MUSKRAT	2									
MEADOW VOLE		2								
SAGEBRUSH VOLE										
VOLE species					T10					
MOUSE species				+		1		T18		
HOUSE MOUSE										
PORCUPINE		1			1			T2		
COYOTE	+	T1	4		2	3		T8	T	
WOLF		T6								
RED FOX		D1			T2	T2		T6	T	1
SWIFT FOX										
RACOON										
FISHER		D1								
ERMINE										
LONG-TAILED WEASEL			1					T2		1
LEAST WEASEL								T3		
WEASEL species		T1		+		T1		T1	T	
MINK	+	T2						T1		
BADGER	+					d1				
STRIPED SKUNK		T1							S1	D1
RIVER OTTER										
FERAL CAT										
BOBCAT										
LYNX		T4								
WOODLAND CARIBOU										
MULE DEER					5	1				
WHITE-TAILED DEER	5	2	14		4	9		T3	3	
DEER species										
MOOSE		3					+			
ELK		T1								
PRONGHORN						39				
TOTAL SPECIES	7	18	7	2	8	9	1	12	7	3

Table 1-2. SASKATCHEWAN CHRISTMAS MAMMAL COUNTS

13. BROMHEAD 2 Jan. 1992	14. CANDLE LAKE 2 Jan. 1992	15. CHOICELAND 2 Jan. 1992	16. CLARK'S CROSSING 29 Dec. 1991	17. CONQUEST 26 Dec. 1991	18. CRAVEN 20 Dec. 1991	19. CROOKED L. (A) 27 Dec. 1991	20. CROOKED L. (B) 30 Dec. 1991	22. DALMENY 20 Dec. 1991	24. DUVAL 28 Dec. 1991	LOCATION & DATE SPECIES
		1								MASKED SHREW
										SHORT-TAILED SHREW
										SHREW species
										NUTTALL'S COTTONTAIL
	T	3	T		1	T9		1	T5	SNOWSHOE HARE
T10		1			2	T1				WHITE-TAILED JACKRABBIT
										BLACK-TAILED PRAIRIE DOG
										13-LINED GROUND SQUIRREL
										RICHARDSON'S GR. SQUIRREL
										GREY SQUIRREL
										FOX SQUIRREL
	22	11				8	1			RED SQUIRREL
										NORTHERN FLYING SQUIRREL
										NORTHERN POCKET GOPHER
T1										BEAVER
		T1								DEER MOUSE
										GAPPER'S RED-BACKED VOLE
						1				MUSKRAT
										MEADOW VOLE
										SAGEBRUSH VOLE
										VOLE species
						T10			T8	MOUSE species
										HOUSE MOUSE
	1	1			1					PORCUPINE
T1		3		1		T1			T17	COYOTE
										WOLF
T1	1	T1	T		T1	3		1	T6	RED FOX
										SWIFT FOX
						T1				RACOON
										FISHER
						T2				ERMINE
						T2			T1	LONG-TAILED WEASEL
										LEAST WEASEL
		T7							T2	WEASEL species
		T1				T2				MINK
d1										BADGER
									S1	STRIPED SKUNK
										RIVER OTTER
										FERAL CAT
										BOBCAT
										LYNX
										WOODLAND CARIBOU
			10							MULE DEER
10	13	17	9		12	T5			2	WHITE-TAILED DEER
										DEER species
		1								MOOSE
		T2								ELK
										PRONGHORN
6	5	13	4	1	5	12	1	2	7	TOTAL SPECIES

Table 1-3. SASKATCHEWAN CHRISTMAS MAMMAL COUNTS

SPECIES / LOCATION & DATE	25. EDAM 29 Dec. 1991	26. ENDEAVOUR 25 Dec. 1991	27. FENTON 26 Dec. 1991	28. FT. QU'APPELLE 17 Dec. 1991	29. FORT WALSH 14 Dec. 1991	30. GARDINER DAM 16 Dec. 1991	31. GLENTWORTH 19 Dec. 1991	32. GOOD SPIRIT L. 22 Dec. 1991	33. GOVENLOCK 15 Dec. 1991
MASKED SHREW									
SHORT-TAILED SHREW									
SHREW species									
NUTTALL'S COTTONTAIL					6	1	7		2
SNOWSHOE HARE				1	T2	T6		T10	
WHITE-TAILED JACKRABBIT		1		+	T15	T10	13	T1	T20
BLACK-TAILED PRAIRIE DOG									
13-LINED GROUND SQUIRREL									
RICHARDSON'S GR. SQUIRREL							2		
GREY SQUIRREL									
FOX SQUIRREL									
RED SQUIRREL		4	2		29			5	
NORTHERN FLYING SQUIRREL								1	
NORTHERN POCKET GOPHER									
BEAVER						L1			
DEER MOUSE					T1		T3		
GAPPER'S RED-BACKED VOLE								3	
MUSKRAT				2					
MEADOW VOLE									
SAGEBRUSH VOLE							D1		
VOLE species					T16	T15			
MOUSE species					T13	T5			T7
HOUSE MOUSE									
PORCUPINE		T1	1		3	D1	1	1	
COYOTE		1	+	+	9	3	19	T2	8
WOLF									
RED FOX	1			1	1	T1	2		T1
SWIFT FOX							T3		T1
RACOON									
FISHER									
ERMINE		T1		+					
LONG-TAILED WEASEL							T2		
LEAST WEASEL									
WEASEL species					T4	T1		T4	T1
MINK				+		T1			
BADGER					d1		d2		
STRIPED SKUNK									
RIVER OTTER									
FERAL CAT									
BOBCAT					T1				
LYNX									
WOODLAND CARIBOU									
MULE DEER					31	5	17		102
WHITE-TAILED DEER	8	1		+	34	21	3	4	1
DEER species		T			T17				
MOOSE		T							
ELK		T			T2				
PRONGHORN					46		117		396
TOTAL SPECIES	2	8	3	8	16	13	9	14	10

Table 1-4. SASKATCHEWAN CHRISTMAS MAMMAL COUNTS

34. GRASSLANDS N.P. 28 Dec. 1991	38. HUDSON BAY 26 Dec. 1991	39. HUMBOLDT 26 Dec. 1991	40. INDIAN HEAD 29 Dec. 1991	41. KAMSACK 14 Dec. 1991	42. KELVINGTON 14 Dec. 1991	43. KENASTON 23 Dec. 1991	44. KILWINNING 22 Dec. 1991	45. KINDERSLEY 31 Dec. 1991	LOCATION & DATE SPECIES
		1							MASKED SHREW
									SHORT-TAILED SHREW
	T1								SHREW species
7									NUTTALL'S COTTONTAIL
	2	T6	T1		T6	+			SNOWSHOE HARE
8		+	11		T1	3			WHITE-TAILED JACKRABBIT
463									BLACK-TAILED PRAIRIE DOG
									13-LINED GROUND SQUIRREL
14									RICHARDSON'S GR. SQUIRREL
			1	13					GREY SQUIRREL
									FOX SQUIRREL
	5		13	1	T1		5		RED SQUIRREL
									NORTHERN FLYING SQUIRREL
									NORTHERN POCKET GOPHER
									BEAVER
2									DEER MOUSE
									GAPPER'S RED-BACKED VOLE
									MUSKRAT
									MEADOW VOLE
									SAGEBRUSH VOLE
T3									VOLE species
					T2	+			MOUSE species
									HOUSE MOUSE
7		1		6	T1	+			PORCUPINE
23			3	7		+			COYOTE
									WOLF
1		2	8	5	D1	+	T10		RED FOX
									SWIFT FOX
			+	6	T1				RACOON
									FISHER
									ERMINE
T3			2			+			LONG-TAILED WEASEL
			1						LEAST WEASEL
	T4								WEASEL species
									MINK
d2									BADGER
D1				1	T1				STRIPED SKUNK
									RIVER OTTER
									FERAL CAT
T1									BOBCAT
									LYNX
									WOODLAND CARIBOU
216			7					7	MULE DEER
19	4	T25	22	51	T34	+	T20		WHITE-TAILED DEER
			T13						DEER species
	T1			2					MOOSE
									ELK
144								1	PRONGHORN
16	6	6	11	9	9	8	3	2	TOTAL SPECIES

Table 1-5. SASKATCHEWAN CHRISTMAS MAMMAL COUNTS

SPECIES / LOCATION & DATE	47. KUTAWAGAN L. 27 Dec. 1991	48. LA RONGE 26 Dec. 1991	49. LAST MT. L. W.M.U. 26 Dec. 1991	50. LEADER 20 Dec. 1991	52. LOVE-TORCH R. 31 Dec. 1991	53. LUSELAND 27 Dec. 1991	55. MATADOR 27 Dec. 1991	57. MELFORT 14 Dec. 1991	58. MELVILLE 25 Dec. 1991
MASKED SHREW									
SHORT-TAILED SHREW									
SHREW species									
NUTTALL'S COTTONTAIL									
SNOWSHOE HARE	T	T9	T2		5				
WHITE-TAILED JACKRABBIT	2		17	2	1	3	1		+
BLACK-TAILED PRAIRIE DOG									
13-LINED GROUND SQUIRREL						+			
RICHARDSON'S GR. SQUIRREL									
GREY SQUIRREL									
FOX SQUIRREL									
RED SQUIRREL		4			7			2	
NORTHERN FLYING SQUIRREL					1				
NORTHERN POCKET GOPHER			d1						
BEAVER									
DEER MOUSE					2				
GAPPER'S RED-BACKED VOLE									
MUSKRAT		1							
MEADOW VOLE									
SAGEBRUSH VOLE									
VOLE species		T6			1				
MOUSE species	T			12					+
HOUSE MOUSE									
PORCUPINE	1		2			2	2		
COYOTE	T	T2	3	4	+	3	1		3
WOLF									
RED FOX	T	T4	1	1	13	1		2	
SWIFT FOX									
RACOON									
FISHER									
ERMINE		T3	T1						
LONG-TAILED WEASEL					1				
LEAST WEASEL									
WEASEL species	T							1	+
MINK		T2	T1						
BADGER									
STRIPED SKUNK	S1		S2						1
RIVER OTTER		T1							
FERAL CAT									
BOBCAT									
LYNX									
WOODLAND CARIBOU									
MULE DEER	9			13		+	250		
WHITE-TAILED DEER	T	T2	9	16	24	+	23		1
DEER species									
MOOSE		T2			T1				
ELK									
PRONGHORN				12			35		
TOTAL SPECIES	10	11	10	7	11	7	6	3	6

Table 1-6. SASKATCHEWAN CHRISTMAS MAMMAL COUNTS

59. MOOSE JAW 26 Dec. 1991	60. NAICAM 27 Dec. 1991	62. NIPAWIN 27 Dec. 1991	63. PIKE LAKE 21 Dec. 1991	65. PREECEVILLE 26 Dec. 1991	66. PRINCE ALBERT (A) 21 Dec. 1991	67. PRINCE ALBERT (B) 22 Dec. 1991	68. PRINCE ALBERT N.P. 15 Dec. 1991	69. QU'APPELLE V. DAM 14 Dec. 1991	LOCATION & DATE SPECIES
									MASKED SHREW
									SHORT-TAILED SHREW
									SHREW species
								2	NUTTALL'S COTTONTAIL
T9	T		1	+			T70	T	SNOWSHOE HARE
T15									WHITE-TAILED JACKRABBIT
									BLACK-TAILED PRAIRIE DOG
									13-LINED GROUND SQUIRREL
									RICHARDSON'S GR. SQUIRREL
									GREY SQUIRREL
									FOX SQUIRREL
	H1	2		1	2	2	11		RED SQUIRREL
									NORTHERN FLYING SQUIRREL
									NORTHERN POCKET GOPHER
T2									BEAVER
									DEER MOUSE
									GAPPER'S RED-BACKED VOLE
									MUSKRAT
									MEADOW VOLE
									SAGEBRUSH VOLE
			T1				T1		VOLE species
T6	T		T3				T1		MOUSE species
									HOUSE MOUSE
	T2					1			PORCUPINE
T5		1	T2			+			COYOTE
		2					T10		WOLF
1			1			+	4		RED FOX
									SWIFT FOX
T1							T1		RACOON
									FISHER
									ERMINE
T1			1						LONG-TAILED WEASEL
T1									LEAST WEASEL
	T1		T2						WEASEL species
T3							T1		MINK
T1									BADGER
T1									STRIPED SKUNK
									RIVER OTTER
									FERAL CAT
									BOBCAT
									LYNX
									WOODLAND CARIBOU
			T1					13	MULE DEER
T35			5	3			7	20	WHITE-TAILED DEER
			T14				T15	3	DEER species
		5					T5		MOOSE
							20		ELK
								4	PRONGHORN
13	5	4	8	3	1	4	11	5	TOTAL SPECIES

Table 1-7. SASKATCHEWAN CHRISTMAS MAMMAL COUNTS

SPECIES / LOCATION & DATE	70. RAYMORE 25 Dec. 1991	71. READ LAKE 19 Dec. 1991	72. REGINA 26 Dec. 1991	73. ROUND LAKE 1 Jan. 1992	74. SASKATOON 26 Dec. 1991	75. SCOTT 29 Dec. 1991	76. SIMPSON 26 Dec. 1991	77. SKULL CREEK 27 Dec. 1991	79. SPALDING 27 Dec. 1991
MASKED SHREW	1								
SHORT-TAILED SHREW									
SHREW species	T3								
NUTTALL'S COTTONTAIL								8	
SNOWSHOE HARE	4	T1		T21	1			1	3
WHITE-TAILED JACKRABBIT	9		5	T5	T	T4			
BLACK-TAILED PRAIRIE DOG									
13-LINED GROUND SQUIRREL									
RICHARDSON'S GR. SQUIRREL								3	
GREY SQUIRREL									2
FOX SQUIRREL									
RED SQUIRREL	H1	T6		2				1	
NORTHERN FLYING SQUIRREL									
NORTHERN POCKET GOPHER									
BEAVER				2					
DEER MOUSE	2								3
GAPPER'S RED-BACKED VOLE	3								
MUSKRAT				3					
MEADOW VOLE	4								1
SAGEBRUSH VOLE									
VOLE species						T30			
MOUSE species				T17	T2				
HOUSE MOUSE	7								
PORCUPINE	3			T3				1	+
COYOTE	9			1	4	T2	T	2	2
WOLF									
RED FOX	2	T2	17	1	1	1	T		1
SWIFT FOX									
RACOON									T
FISHER		+							
ERMINE	1								
LONG-TAILED WEASEL	T2			T6	2			1	
LEAST WEASEL				T1	1				
WEASEL species				T3					T
MINK				1					
BADGER	d1								
STRIPED SKUNK	S1								
RIVER OTTER									
FERAL CAT	2								
BOBCAT									
LYNX									
WOODLAND CARIBOU		+							
MULE DEER				T2			2	2	+
WHITE-TAILED DEER	43			T50	2	T3	5	24	T
DEER species	T20				T5				
MOOSE		T1		T1				1	
ELK									
PRONGHORN								18	
TOTAL SPECIES	17	6	2	15	8	5	4	11	11

Table 1-8. SASKATCHEWAN CHRISTMAS MAMMAL COUNTS

80. SPINNEY HILL 28 Dec. 1991	81. SPRING VALLEY 24 Dec. 1991	83. SQUAW RAPIDS 22 Dec. 1991	84. SWIFT CURRENT 29 Dec. 1991	85. TISDALE 25 Dec. 1991	86. TOMPKINS 2 Jan. 1992	87. VAL MARIE 15 Dec. 1991	89. WARMAN 1 Jan. 1992	90. WAUCHOPE 28 Dec. 1991	LOCATION & DATE SPECIES
		D1					+		MASKED SHREW
		1							SHORT-TAILED SHREW
									SHREW species
	1					1			NUTTALL'S COTTONTAIL
		1	1					T4	SNOWSHOE HARE
	5	T	+			2		T1	WHITE-TAILED JACKRABBIT
									BLACK-TAILED PRAIRIE DOG
									13-LINED GROUND SQUIRREL
			1						RICHARDSON'S GR. SQUIRREL
									GREY SQUIRREL
								2	FOX SQUIRREL
2		29							RED SQUIRREL
									NORTHERN FLYING SQUIRREL
									NORTHERN POCKET GOPHER
		L2							BEAVER
		T7						T1	DEER MOUSE
									GAPPER'S RED-BACKED VOLE
									MUSKRAT
								T1	MEADOW VOLE
									SAGEBRUSH VOLE
		T8							VOLE species
	T		1	1				1	MOUSE species
									HOUSE MOUSE
1	1	2			1			T2	PORCUPINE
1	2	9			3	3	2	1	COYOTE
		6							WOLF
	T	T3						+	RED FOX
									SWIFT FOX
									RACOON
									FISHER
									ERMINE
			1						LONG-TAILED WEASEL
				1					LEAST WEASEL
	T	T4						T4	WEASEL species
		T1							MINK
	1					1			BADGER
	+								STRIPED SKUNK
		T1							RIVER OTTER
									FERAL CAT
									BOBCAT
		T1							LYNX
									WOODLAND CARIBOU
7	22		21		102	3			MULE DEER
14	2	4	15	6	29	61		14	WHITE-TAILED DEER
									DEER species
		T4							MOOSE
		T20							ELK
					128	63			PRONGHORN
5	11	19	7	3	5	7	2	10	TOTAL SPECIES

Table 1-9. SASKATCHEWAN CHRISTMAS MAMMAL COUNTS

SPECIES / LOCATION & DATE	91. WEYBURN 3 Jan. 1992	92. WHITE BEAR 29 Dec. 1991	93. WHITE BEAR L. 19 Dec. 1991	94. WHITEBEECH 27 Dec. 1991	95. WHITEWOOD 2 Jan. 1992	96. YORKTON 29 Dec. 1991	97. CARRAGANA 26 Dec. 1991	98. CHRISTOPHER L. 25 Dec. 1991	TOTAL COUNTS PER SPECIES
MASKED SHREW									6
SHORT-TAILED SHREW									1
SHREW species				+					2
NUTTALL'S COTTONTAIL		2							13
SNOWSHOE HARE			1	T10	+		4		44
WHITE-TAILED JACKRABBIT		1							40
BLACK-TAILED PRAIRIE DOG									1
13-LINED GROUND SQUIRREL									1
RICHARDSON'S GR.									4
GREY SQUIRREL						1			4
FOX SQUIRREL	+								2
RED SQUIRREL			8	1	2		3		36
NORTHERN FLYING SQUIRREL									2
NORTHERN POCKET GOPHER									1
BEAVER									9
DEER MOUSE							2		12
GAPPER'S RED-BACKED VOLE									2
MUSKRAT									5
MEADOW VOLE									4
SAGEBRUSH VOLE									1
VOLE species									10
MOUSE species									23
HOUSE MOUSE							D2		2
PORCUPINE		1		T1			1		35
COYOTE		4			3		4		53
WOLF									4
RED FOX	1	1	1	+	1		2		55
SWIFT FOX									2
RACOON									7
FISHER									2
ERMINE									6
LONG-TAILED WEASEL							1		18
LEAST WEASEL									6
WEASEL species				T1					23
MINK									13
BADGER									10
STRIPED SKUNK			1	T1					15
RIVER OTTER									2
FERAL CAT									1
BOBCAT									2
LYNX									2
WOODLAND CARIBOU									1
MULE DEER	8	205							27
WHITE-TAILED DEER	11	1	11	+	15		5		64
DEER species									8
MOOSE			1	+			2		17
ELK				+			2	2	8
PRONGHORN									15
TOTAL SPECIES	4	7	6	10	5	1	11	1	

THE AGE OF BIRDS

ALAN FEDDUCCIA. 1980. Harvard University Press, Cambridge, Massachusetts. 196 pp.

The first book in English devoted to paleornithology (the study of fossil birds and their evolution) was published in 1937 by Gerhard Heilmann and entitled *The Origin of Birds.*[4] This book was the primary source of information then known on avian evolution. Though some of the text is dated, and certain taxa have subsequently been abandoned or reorganized, it is still highly cited. Alan Fedduccia's *The Age of Birds*, published in 1980, is the current synopsis of this topic but is written in a more popular vein. This book is filled with questions and divergent theories, and collates them in a geologically historical perspective.

Fedduccia's 181 pages of text and illustrations begin as one would expect with *Archaeopteryx* — the earliest known bird, found in the Solnhofen region of Germany in rocks of the Jurassic Period, 140 million years ago. The first chapter also introduces the reader to avian osteology, avian paleontology in evolutionary thought, and flight mechanics, all of which are relevant throughout the book.

The next two chapters deal with the ancestry of birds (dinosaurs or pseudosachians?) and the evolution of flight (cursorial, arboreal or both?).

Succeeding chapters discuss the habitational or general morphological groups: toothed birds; shorebirds; ducks and waders; birds of prey; and land birds. One section (Chapter 6) discusses flightlessness as an evolutionary adaptation. All chapters are thoroughly researched, with occasional citations of major published works — to this there is not doubt. Fedduccia's expertise (and occasional bias) also surfaces when he discusses birds from the Eocene Epoch.

There are more than 200 illustrations, tables, and photographs, which help the reader understand discussions of osteology, reconstructions and habitat. However, if there is a problem with the book, it is in the consistency (or lack of it) of illustrations. They range from simple line drawings to black and white photo reproductions of colour prints. It would have been more pleasing to the eyes if there had been a competent illustrator on hand to make the graphics more coherent.

Another problem I had was the often overextensive discussions of ornithology as opposed to paleornithology. It is worthwhile to compare distinct forms to related modern species, but it does not seem useful to spend paragraph after paragraph discussing the distribution and habitat of modern species when early ancestors could have had a quite different distribution owing to climatic and geographical differences.

The last factor that should be discussed in some detail is the age of the book. It was published in 1980 and as far as I know no subsequent editions have come forth. This book should be updated. For example, Storrs Olson's publication on avian evolution arranged in systematic order, has collated almost the entire literature of fossil birds into a cohesive portfolio.[5]

One of the major changes to the book, should Fedduccia consider a rewrite, would be to update the entire first three chapters.

In 1983 Sankar Chatterjee, a paleontologist at Texas Tech University, discovered the remains of a small fossil skeleton over 200 million years old, at the Dockum Foundation of Texas. The fossil, as it turned out, is a fairly advanced bird (at least more so than the next oldest bird, *Archaeopteryx*, at 140 million years) and has been tagged with the name *Protoavis* (see Figure 1). Since 1983, another partial skeleton has come to light and recently Chatterjee officially announced these discoveries to the world.[3] His monograph deals with the skull in detail only, with a subsequent monograph on the rest of the body promised. The 69 pages of text and illustrations describe the skull in detail, its cranial structure and comparisons with archosaurs (dinosaurs) and birds (including the famed *Archaeopteryx*). If the paleontological community were to agree with Chatterjee's conclusions, concepts of the organization and early radiation of birds would drastically change. Agreement is not to be found so far.[1,2,6] Fedduccia had commented that calling Protoavis "the original bird is irresponsible" and adds that interpreting the material is like "reading tea leaves in the bottom of a dark cup."[1]

The position of *Protoavis* in bird evolution will be determined by the test of time and will be based more on discoveries and re-analysis. It should be kept in the back of our minds that *Archaeopteryx* also went through the same period of scepticism. Herman Von Meyer, one of the original investigators of *Archaeopteryx*, made the comment about this fossil (also recorded in Fedduccia's book, page 15): "The *Archaeopteryx* is of its kind — just as perfect as a creature as other creatures, and if we are not able to include this fossil animal in our system, our short-sightedness is alone to blame."

The Age of Birds is a fact-filled, easy to read book that covers the broad spectrum of avian evolution and radiation, and should be part of any ornithologist's library. It should also prove interesting to see how future popular synopses of avian paleontology treat *Protoavis*.

Reviewed by *Tim Tokaryk*, Saskatchewan Museum of Natural History, 2340 Albert Street, Regina, Saskatchewan. S4P 3V7

1. ANDERSON, A. 1991. Early bird threatens *Archaeopteryx*'s perch. *Science* 253:35.

2. ANONYMOUS, 1991. Early bird born late. *Nature* 351:677-678.

3. CHATTERJEE, S. 1991. Cranial anatomy and relationships of a new Triassic bird from Texas. Philosophical Transactions; Biological Series 332:277-346.

4. HEILMANN, G. 1927. The origin of birds. D. Appleton and Company, New York.

5. OLSON, S. 1985. The fossil record of birds. *In* Avian Biology, Vol. 3. D.S. FARNER et al., editors. Academic Press, Toronto.

6. OSTROM, J. 1991. The bird in the bush. *Nature* 353:212.

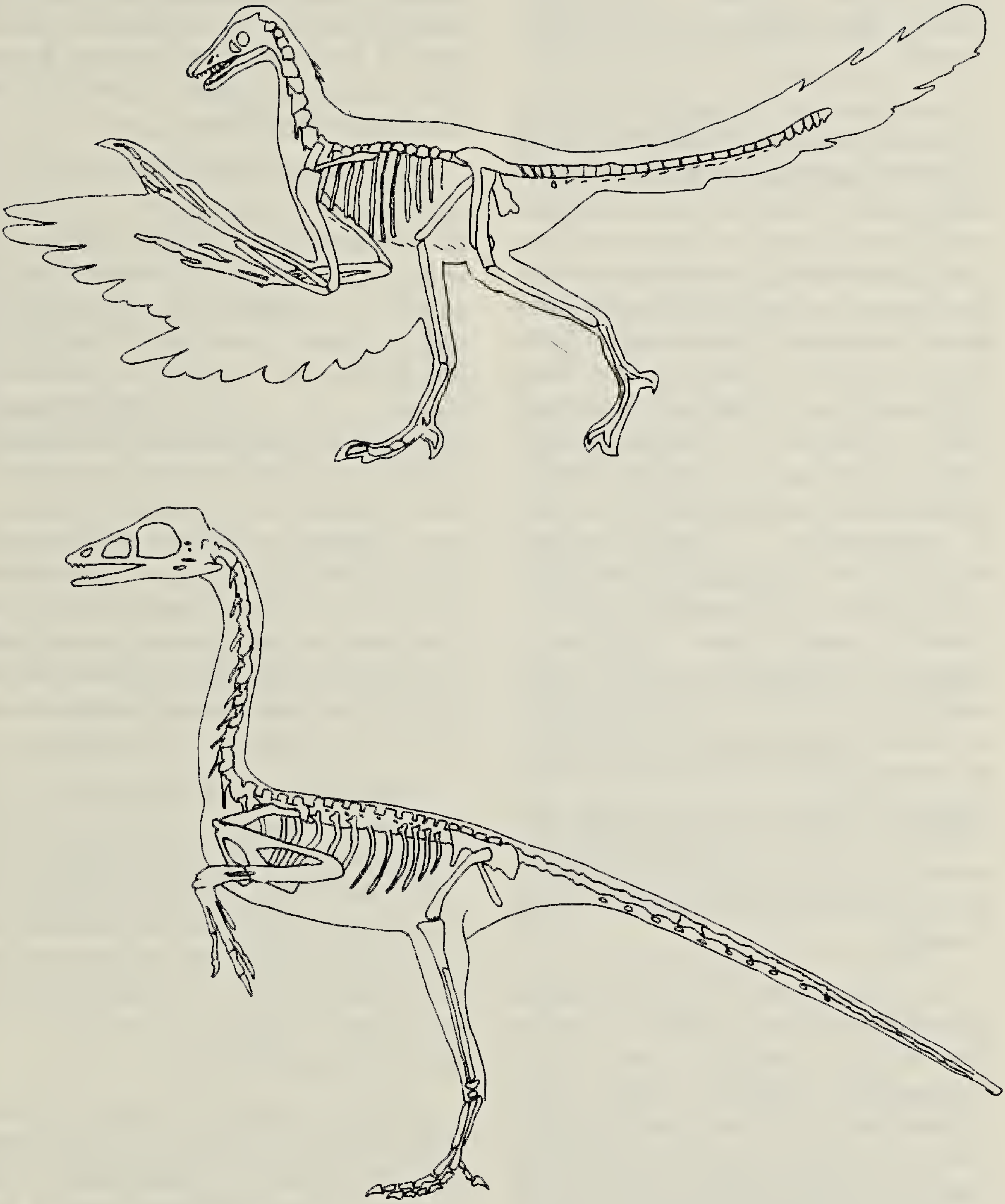


Figure 1. Reconstructions of skeletons Archaeopoteryx *(top) (after Fedducia 1980, p. 44) and* Protoavis *(after Chatterjee 1991, p. 285). Neither are to scale.*

GEOLOGICAL HISTORY OF SASKATCHEWAN

JOHN STORER. 1989. Saskatchewan Museum of Natural History, Regina, Saskatchewan. 91 pp. Colour and black and white photographs; index. Softcover, $13.50 plus GST and $2 mailing charge.

John Storer's *Geological History of Saskatchewan* is a book that many of us have waited for. It fills a void of many years. Now we have available more than a sketchy treatment of our geological history, as well as our native plants and animals and the life forms from which they evolved. Anthony Gordon's *Geology of Saskatchewan: A Historical Approach* (1979, reviewed in *Blue Jay* March 1980, p. 58), was a substantial help, but it lacked colour illustrations. Lack of imagination in distribution and early use of Dr. Gordon's book further limited its usefulness. Dr. Storer's recent book provides a balance of detailed accurate verbal description with colour and black and white photographs and line drawings, an extensive list of references and a detailed index. It is readable and worthy of careful study by both the curious amateur and the serious student of the geology of northern North America.

Two quotations will give potential readers some estimation of quality and clarity in the text. First, on the Ordovician Period, page 28: "Ordovician rocks are very familiar to people because they are normally used as building stones such as the Tyndall stone that faces the Saskatchewan Museum of Natural History, the Legislative Building and many other buildings. Although Tyndall stone is quarried near Winnipeg and shipped from there to other parts of Canada, identical rock is found as glacially transported fieldstone throughout southern Saskatchewan."

For a second example, on the fauna of the middle Miocene, page 68: "Woodland, possibly occurring along stream banks, is also indicated by the presence of hedgehogs, moles, shrews, bassarisks, peccaries, chipmunks, flying squirrels, beavers and a mastodon. This was probably a less dry environment than that of the preceding Topham Local Fauna, but much more open than the Oligiocene landscape."

Some of the terms in the quotations used as examples may seem formidable, but most are defined in the text or skillfully related to similar objects or species by the author's appropriately descriptive language. References to the Earth Sciences Gallery in the Saskatchewan Museum of Natural History at Regina will lead readers to mark Regina and the museum as necessary destinations. Whether readers of the book visit our museum or not, *Geological History of Saskatchewan* will provide them with a new perspective of Saskatchewan landforms, present plants and animal species and some vision of the pre-history of our province.

The book has few deficiencies, but the lack of a table of contents could confuse some readers. Similarly, the presentation of a chart of the glaciations and interglacial periods of the Quaternary Period should precede or be placed earlier in the discussion of this major event in evolution of landforms and lifeforms.

Storer's *Geological History of Saskatchewan* is much more than geology. It offers a magnificent expansion of any reader's vision of the province. Moreover, it provides insight into the origin of the Great Plains of North America and the living and extinct forms which characterize this part of our home earth.

Reviewed by *J.R. Jowsey*, Box 400, Saltcoats, Saskatchewan. S0A 3R0

POETRY

PORTRAIT

Seagull on our window sill
Standing so still
On your coral webbed feet,
Are you waiting
For the artist to paint
A portrait
Of your noble white head
With its strong yellow beak?

Do your sharp eyes detect
The inferior object
On her water color paper
She is sketching –
A tethered dead boat
Kept tamely afloat
In the grave winter bed
Of the Inner Harbor?

You proudly stretch your wings
To prove they are living things;
You lift your ivory breast
To show its soft gray patterning;
You quiver your white tail
Assured you cannot fail
To substitute for the dead
A live bird no artist can resist.

By *Jean MacKenzie*, 1014 7th Street East, Saskatoon, Saskatchewan. S7H 0Y8

HANDLE WITH CARE

Handle with care this prairie of glass
after a freezing rain.

Sunflowers and grasses are
entombed in ice and appear
frozen in time
like mammoths in icebergs
preserved like insects in a drop of
honey.

Rosehip popsicles glazed like
candied apples
taste cool and wet like fresh autumn
rain
and feel round and smooth like tiny
crystal balls.

The skinny aspen branches all hang
heavy
like crystal chandeliers
Chinkling and tinkling in the prairie
wind
Crashing and smashing as they fall
to the ground
and under my heavy steps.

And when the sun shines bright onto
the glaring ice
the prairie is a prism of light and
color
like the sight of distant Christmas
lights
during an evening winter storm.

I have never experienced such a
magical place
a crystallized community
so very fragile, beautiful, and rare
except for when I was standing in
this very spot
before the freezing rain.

By *Rhonda O'Grady*, 252 Inglewood Street, Winnipeg, Manitoba. R3J 1W7

LETTERS

CATTLE EGRET AT WHITE BEAR

Dear *Blue Jay*:

In early November of 1990, Leonard Smid, a farmer at White Bear, Saskatchewan, noticed an all white, chicken-sized bird, feeding in a nearby field. Later this bird was seen in the farmer's yard. Then, not seeing that the bird again, Leonard assumed that it had migrated.

When working in his yard in April 1991, Leonard found the carcass of the bird, which was identified as a cattle egret. The bird was approximately 20" long, with all white plumage, black legs and feet and a yellow bill.

Sig Jordheim, Box 59, White Bear, Saskatchewan. S0L 3L0

HOUSE FINCH VISITS BRANDON

Dear Editor:

On July 22, I got a phone call from my daughter Mildred J. Wenger. She asked me to come with her to see a beautiful bird which had been feeding at her bird feeder. I said I could, so she arrived quite soon after and took me to her home in southeastern Brandon.

Their bird feeder was straight out from the bay window in their kitchen and I sat inside watching Siskins and Gold Finches and House Sparrows feast on seed from the feeder. Although there were a lot of birds feeding there, the minutes seemed to be very long as the "beautiful bird" was slow in showing up for some seeds. My daughter and I were getting worried as we began to wonder if it had left the area, but all of a sudden there it was there - adorned with red feathers on its head and breast and also a few at the base of its tail. It sure did not take long to see that we were looking at a male House Finch in all its beauty.

This brings to four the number of rare birds I have seen, including a Rufous Hummingbird, Whooping Cranes, an Indigo Bunting and now a House Finch.

Later that day, when telling Brandon bird watcher Barbara Robinson of seeing the House Finch, she told me that a woman living in a northwestern area of Brandon had some of the birds nesting near her home. Who knows when or where they will be seen next?

Harold Watson, 220 Franklin Street, Brandon, Manitoba. R7A 5P3

MORE ALBINO BIRDS

Dear Editor:

After reading "Observations of Albinism in Birds" by Jean Bancroft (*Blue Jay* 49), I looked through my field notes and found the following sightings:

> "27 August 1991. On the way to the harvest field, saw a flock of several thousand American Crows. There among them, flying along was an albino crow, not white but a very pale gray all over. Although I watched every flock of crows all fall, I did not see it again."
>
> "1 June 1981. Raining. Around 20 Canada Geese grazing south of the cattle shed on tame grass. One goose was an albino."

I also remember seeing a partial albino Ring-necked Pheasant several different times here on the ranch, although I have neglected to write it down in my notes.

All above observations were made a few miles northeast of Leader, Saskatchewan, at my home or nearby.

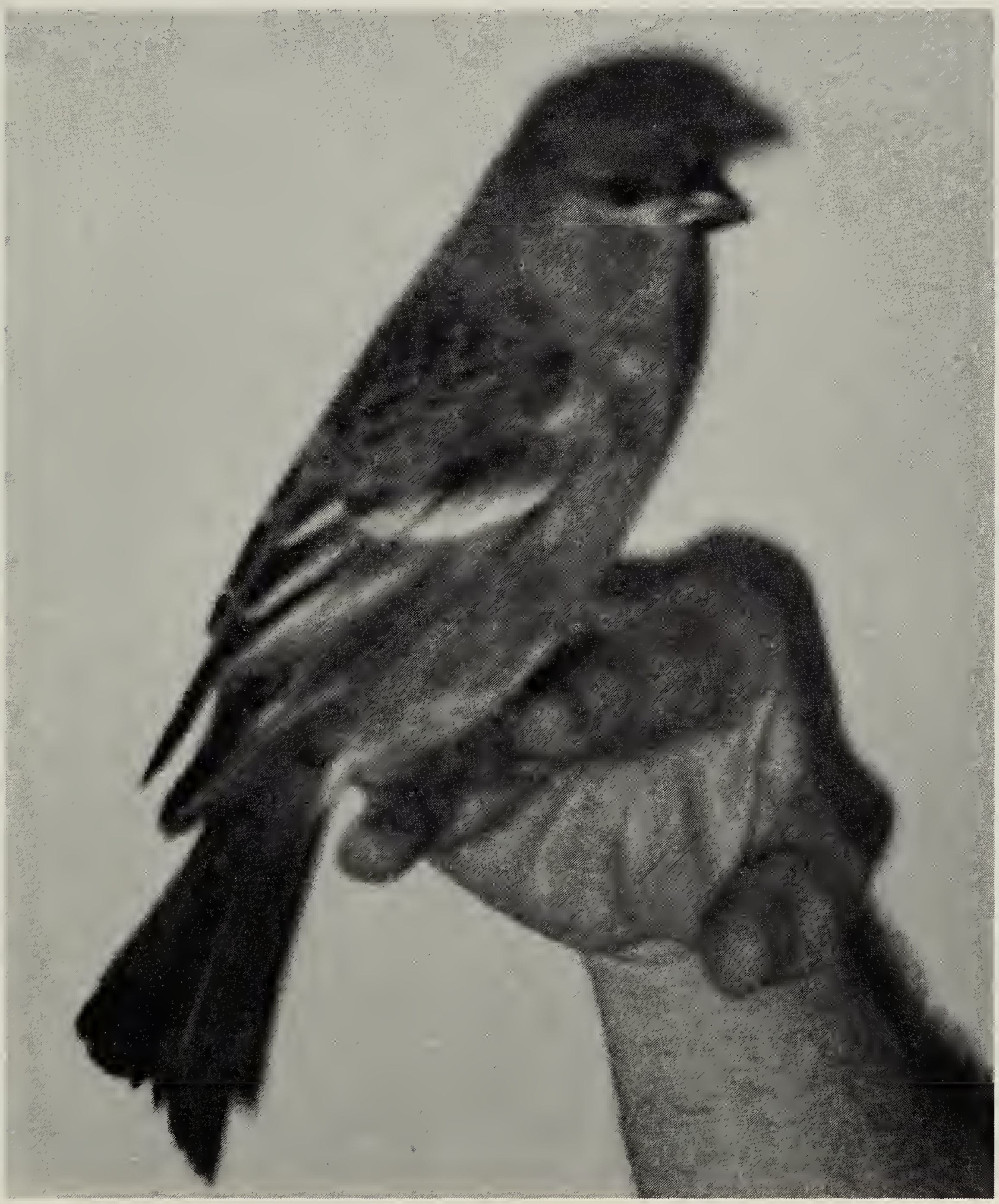
Daisy D. Meyers, Box 218, Leader, Saskatchewan. S0N 1H0

DAZED BUT FRIENDLY PINE GROSBEAK

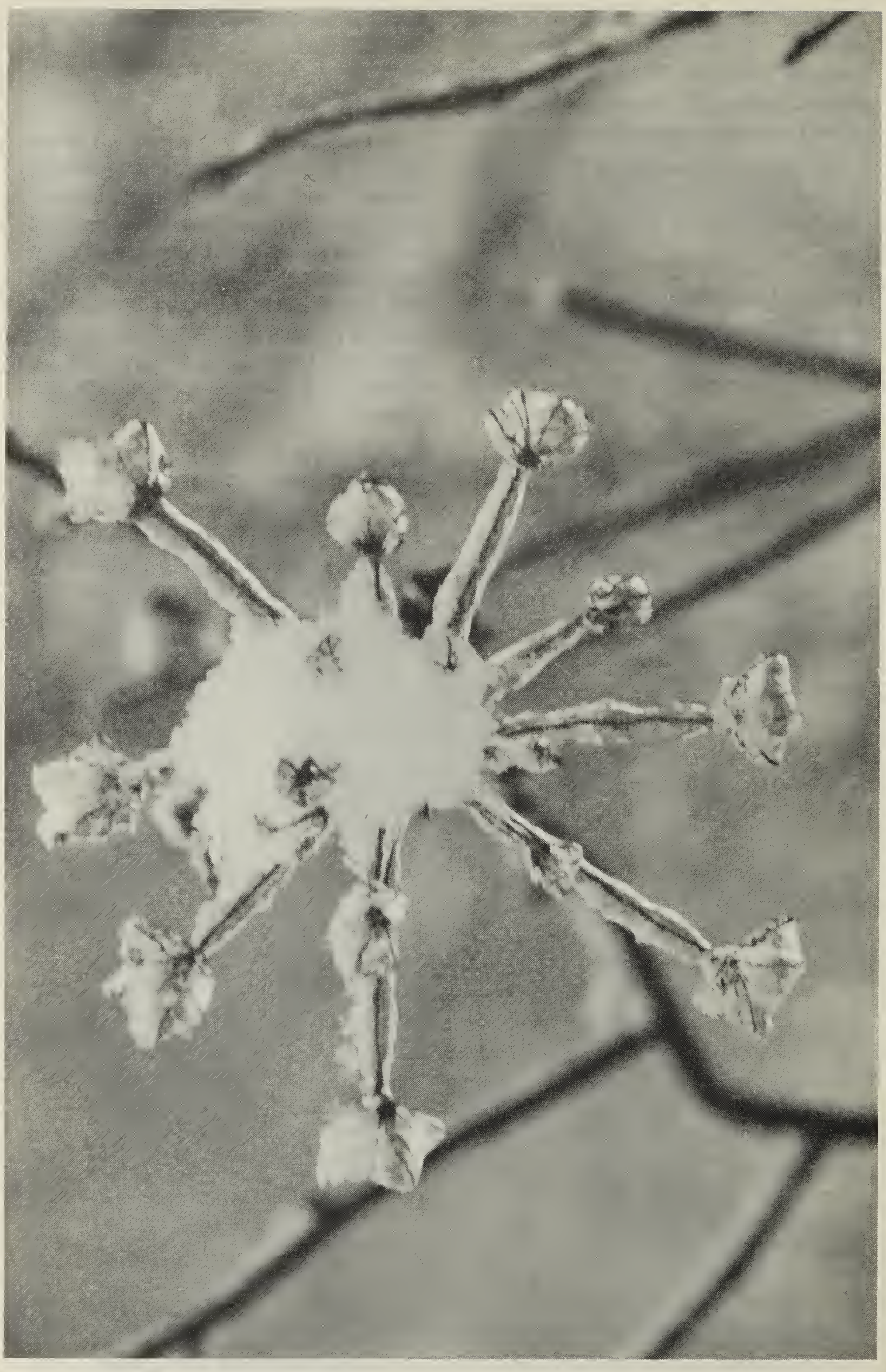
Dear *Blue Jay*:

In February 1991, while we were visiting our daughter and son-in-law, Barbara and Vern Nygard of Tisdale, Saskatchewan, a Pine Grosbeak hit the window. After the bird came to he was reluctant to leave, so they took him into the house. I was able to get a good picture of him before he was sent on his way. The picture may be of interest to bird lovers who read the *Blue Jay*.

Aletha Stein, Box 14, LeRoy, Saskatchewan. S0K 2P0



Pine Grosbeak *Aletha Stein*



Ice sculpture. *Rhonda O'Grady*

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